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General Article

PARASITIC GASTRITIS

The Causes Underlying its Development in Sheep*

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Parasitic gastritis is generally recognised as the most important disease of sheep throughout the world, and exercises a controlling influence over all sheep-farming practices in the British Isles. Its development in a mild form is so frequent an occurrence as to call for little or no comment by the sheep farmer, and the losses resulting from an unthrifty condition of the lambs, accompanied by occasional deaths in the less severe outbreaks, appear to be regarded rather as one of the several unfortunate circumstances incidental to sheep farming than as the result of a specific disease that calls for special preventive measures.

On account of the great prevalence of this disease the economic loss to the whole country is most difficult to estimate; some particulars obtained during the outbreak that occurred in the winter of 1933-1934 appear,[1] however, to be fairly reliable, and suggest that the loss is even greater than had previously been suspected. The returns showed that 43 farmers in a restricted area in the south of England lost 5,131 out of a total of 33,373 lambs, and from returns concerning the losses from poor condition it was calculated that even when allowances were made for a 5 per cent. death rate from causes other than parasitic gastritis the total loss sustained by these 43 farmers amounted to £10,341, or an average of £240 each.

Unlike the microscopic parasites that cause many of the less prevalent diseases of sheep, the worms responsible for parasitic gastritis are present wherever sheep are kept, and the possibility of their developing to disease-producing numbers is a constant menace to all who farm on good land. This circumstance necessitates the greatest care in the management of sheep, and restricts the size of the flock to numbers greatly below what the land would otherwise carry.

The most important step that has yet been taken towards the satisfactory control of this disease has been the discovery of the parasiticidal effect of copper sulphate, or "bluestone," upon the "twisted wireworm." Treatment with this drug is a most effective measure where infestation with the twisted wireworm is concerned, but it is still not so widely known as it ought to be that several different species of parasitic worms are responsible for this disease; and that copper sulphate only serves for the removal of the twisted wireworm and the prevention or cure of parasitic gastritis caused by that species of worm, the several other species being untouched by the treatment. Research workers at two or three different centres have recently observed, however, that a mixture of copper sulphate and nicotine sulphate has a certain action in expelling the "minute stomach worms" known as *Trichostrongylus*, but none of the many drugs that have been tried appears to have any effect upon the several other species, some of which are a frequent cause of severe disease.

Pending such time as a cheap, safe and efficient drug treatment is found, it is, therefore, important to ensure that everything possible is done to prevent the occurrence of parasitic gastritis. In order to probe more deeply into this question of prevention, a study of the disease has been made from a new angle, and efforts have been made to discover the causes underlying the multiplication of the parasitic worms and the reasons (apart from mere presence of parasites) that lead to the development of outbreaks of the disease.

In explanation of this new line of work, a significant point, not generally recognised by farmers, should first be mentioned, namely, that the parasitic worms responsible for this disease occur wherever sheep are kept, but do not cause any apparent harm unless they are present in very large numbers. Further, they are incapable of any increase in numbers within the sheep, and every individual of the tens of thousands that may be present in a diseased sheep requires to be picked up from the pasture along with the herbage.

It is clear, therefore, that disease is not merely a matter of the infection of susceptible sheep by the parasitic worms, but that it results from the operation of all those factors that lead

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to the ultimate collection of sufficient worms to cause disease.

Inquiries on the site of actual outbreaks in the field, and controlled observations in the laboratory, suggest that the margin of safety between a harmless infestation and a disease-producing infestation is a wide one. Whereas the average number of parasites in healthy lambs is only a matter of hundreds, some 15,000 or 30,000 are necessary to induce disease. Any hindrance that we can put in the way of the accumulation of excessive numbers of parasites in the stomachs of lambs will, therefore, help to keep the infestation within the limits of safety.

Since overcrowding is so obviously of importance, it might be thought that parasitic gastritis is merely the outcome of a sufficient number of sheep per acre grazing the herbage for a sufficient length of time. Field observations show, however, that this is not so, and that other factors also have a powerful influence; and there is reason to believe that slight alterations in management may make all the difference between the continuation of health, on the one hand, and a condition of unthriftiness, or even a disastrous outbreak of disease, on the other. A thorough understanding of the several less obvious factors that contribute to the increase of parasitic worms will be of great value in directing intelligent management along the most advantageous lines.

The beginning that has recently been made in this line of investigation has already produced results of practical value for the prevention of the disease, and has provided satisfactory explanations for some of the perplexing questions concerning its development.

The factors that operate for the increase of parasitic worms in sheep may conveniently be considered under three headings:—

(1) *The Productivity of the Eggs of the Parasite* (*i.e.*, the proportion of the parasites' eggs that reach the infective stage on the ground).

(2) *The Transmissibility of the Infective Larvæ* (*i.e.*, the proportion of the infective larvæ picked up by the sheep).

(3) *The Susceptibility of the Sheep* (*i.e.*, the proportion of infective larvæ reaching the sheep's stomach that ultimately develop to maturity).

The Productivity of the Eggs of the Parasites

Laboratory investigations show that certain conditions are essential for the eggs, reaching the ground with the excrement of the sheep, to give rise to larvæ, and for these immature larvæ finally to develop to the infective larvæ, which are capable of taking up a parasitic existence in the sheep.* Air (or, to be more correct, the oxygen of the air), moisture and a sufficiently high temperature are known to be necessary; and their influence on the development of the larvæ varies with different weather conditions and agricultural operations.

Careful inquiries into outbreaks of the disease in the field, coupled with laboratory observations, have shown something of this influence upon the propagation of infection on the ground, as follows:—

(*a*) *Ploughing.*—Turning in the surface of the soil with the plough appears rather to favour the survival of the parasitic worms than to bring about their destruction. Laboratory tests show that these microscopic young worms can make their way upwards through six inches of moist soil in as short a time as six days. Their longevity is found to depend very largely upon the stability of the moisture content of their surroundings, *i.e.*, they live longest where they are maintained in a moist condition and do not become too wet or too dry. The loose soil of tilled land is therefore more favourable than is the hard surface of a permanent pasture, or the herbage on pasture land, where they would be exposed to rapid alternation of moist and dry conditions as the rain or dew alternated with dry periods.

Tilled land is, therefore, more dangerous than permanent pasture, and cultivation has an important bearing on the amount of infection remaining in the soil at the end of a long period. Observation of severe outbreaks of the disease has shown quite conclusively that disease-producing numbers of larvæ are able to remain alive in the soil for more than ten months.

The occurrence of disease in lambs that are closely folded, and not allowed to run back on to ground that has already been cleared, may often be traced to this cause, sheep having been folded only six or twelve months previously on the ground where the disease develops, and having left a heavy residue of infection behind them.

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* The life history of these parasitic worms may be outlined as follows:—

Situated in the fourth stomach of the sheep, the female worms produce large numbers of eggs which reach the ground along with the dung. During suitably warm weather they hatch within 24 hours and give rise to immature worms that begin to feed in the dung or surrounding soil. After two or three days these larvæ develop a new skin and throw off the old one. They then continue to feed, and after another three or four days develop a second new skin: this time, however, the old skin is not thrown off but is retained as a loose, protecting sheath. At this stage, and not until this stage has been reached, the worms are able to take up their parasitic life in the sheep.

(*b*) *Folding Sheep on Arable Land.*[2]—In addition to favouring the longevity of the larvæ, arable land appears to favour the propagation of infective larvæ on the ground; the trampling of wet ground by sheep results in a thorough mixing of the excrement with soil and produces a perfect medium for the development of the infective larvæ. A mixture of about equal parts of soil and excrement is often used in laboratories as being the best material on which to rear large numbers of the larvæ for experimental purposes. Excrement lying on the hard surface of a pasture is in a much less favourable position from the point of view of development of larvæ, and although laboratory tests have not been carried out, as yet, to ascertain what the actual difference in the productivity of the eggs might be under the two conditions, it is probable that hundreds develop under favourable penning conditions where only units develop on the pastures.*

(*c*) *Superabundance of Herbage.*—The effect of long grass is to favour the productivity of the eggs of the parasitic worms, and the ultimate development of infective larvæ by preventing the excrement of the sheep from becoming dry. Where grass is short the excrement is exposed to air currents and the heat of the sun and soon becomes dry, but in long grass the air close to the ground remains more or less saturated with water vapour and the excrement retains its moisture for a much longer period, as a result of which the propagation of infective larvæ is much more successful.†

(*d*) *Drought.*—A prolonged period of drought favours the development of the disease in two ways, and its influence over the productivity of the eggs is to bring about an accumulation of "potential infection" on the ground; or, in other words, an accumulation of material that may be a danger to the sheep at some future time.

This result of drought does not apply to every species of worm capable of causing parasitic gastritis, but as far as is known, only to the minute stomach worms called *Trichostrongylus.*[3]* The eggs of these worms, when at the stage at which they are just ready to hatch, are exceedingly resistant to dryness and have been observed to retain their vitality under dry conditions for 15 months. As soon as they are hatched they are again dependent upon a certain amount of moisture—just as they are in the early stages of the incubation of the eggs—but when finally they reach the infective stage they are once again resistant. There are thus seen to be two susceptible stages alternating with two resistant stages on the ground.

When the excrement containing the eggs drops on to the ground during a period of drought the embryos begin to develop within the eggs. Some eggs will have hatched, and some hardly begun to develop when dryness overtakes them; both of these will be killed, but others that have had time to reach the very resistant stage just before hatching will be unaffected. Although the dryness completely arrests the development of these eggs it does not destroy them, and they are able to retain their full vitality until moist conditions recur.

In hot countries the excrement of grazing animals dries much more quickly than it does in Great Britain, and the eggs of the parasitic worms are destroyed before they reach the resistant stage. That outcome must be very rare, however, if it happens at all, in this country. Recent investigations have shown[1] that even heavy dews do not moisten the excrement sufficiently to cause the eggs to hatch, and nothing apparently occurs to move them from their resistant stage so long as the weather remains dry.

Throughout the whole of a drought period, there is thus seen to be a gradual accumulation of the living eggs of these parasites on the pastures, and when moist weather conditions return a mass production of infective larvæ takes place, and may be adequate for the development of disease in the grazing sheep.* (Reference at foot of column 1, page 1342.)

Transmissibility of the Larvæ

As every individual worm that a diseased sheep may finally harbour requires at the beginning of its parasitic life to be picked up from the pasture, it is clear that the factors

* The power of this factor in increasing the productivity of the eggs has been observed in a certain severe outbreak where the source of infection was traced to ewes that had been folded over the infected field about four months previously. Healthy ewes pass comparatively few eggs of the parasitic worms, and the only possible explanation for the heavy infection in the lambs which were afterwards folded over the same ground appeared to be the high rate of productivity of the comparatively few eggs passed by the ewes, dependent upon exceptionally suitable conditions for larval development.

† A severe outbreak of parasitic gastritis has been observed that appeared to be attributable to the operation of this factor. It occurred among a flock of lambs grazing in a field that carried a heavy crop of clover. There was much more herbage than the lambs could possibly consume, and almost enough to cut for hay, but in spite of this plentiful supply of good food, many of the lambs died of parasitic gastritis. It seems very probable that the successful propagation of the infective larvæ as a result of the moist atmosphere which was maintained near the surface of the ground, owing to the long herbage, was a contributory cause of first importance.

* Three species of *Trichostrongylus* commonly occur in sheep.

governing this *transmission* of larvæ to the sheep must be of great importance in connection with the development of the disease. One of the factors that is most powerful in its effect upon the transmissibility of the larvæ is drought.

(*a*) *Drought.*—Some of the peculiar migrating habits of the infective stages of the worms are well known. These minute larvæ tend to leave the excrement, when once they have reached the infective stage, and to climb on to the herbage, in the rain or dew on its surface. Although they are such small creatures they are able, under suitable conditions, to reach the tip of a 9-inch blade of grass within 12 hours. They climb most quickly in the dim light of early morning and late evening, or on dull days, but show a tendency to descend in the presence of a bright light. After two or three weeks of this ascending and descending activity, they tend to migrate from the upper parts of the grass and seek more sheltered places near the ground, and it is here that the greater part of the infection lies.[4]

During times of drought, therefore, when the pastures become very bare, the grazing sheep are in danger of picking up more infection because they are compelled to bite nearer to the ground, where more larvæ are to be found. In addition to this, however, they are compelled to graze more diligently and for a longer period each day in order to satisfy their food requirements, and so, on that account also, they collect more young worms.†

(*b*) *Nature of the Herbage.*—Investigations now being carried out suggest that the nature of the herbage may have an important bearing on the acquisition of infection. The structure of the leaves and shoots of some plants is such that the climbing larvæ tend to be confined to the lower leaves. The blade and sheath of a shoot of grass is of such a form as to tend to divert the ascending larvæ to the underside of the lower leaves, and the central leaves of plants that produce their leaves in whorls, such as plantain or chicory, tend to be free from larvæ. Clovers, on the other hand, offer no impediment to the climbing larvæ, which readily mount up the leaf stalk and get on to the trifoliate leaf at the top.

Sheep are selective in their grazing habits and single out the choice parts of the herbage; in avoiding the relatively tough lower leaves of the grass or of plants that produce their leaves in whorls, they are thus seen to be avoiding infection, but in picking off the leafy part of the clover they are selecting the part that carries most of the young worms. The difference between the proportion of larvæ situated in these two places is found to be quite considerable, and there can be no doubt that in some instances the type of herbage may determine the presence or the absence of disease.*

(*c*) *Overcrowding.*—This factor also exercises its powerful influence over the development of parasitic gastritis through bringing about an increase in the transmissibility of the parasite. Supposing the number of sheep per acre to be doubled, then the chances of each larval worm being picked up are also doubled. This increase in the transmissibility of the larvæ is in addition to the increase in the number of eggs reaching the ground along with the excrement, so that the tendency for the increase of parasites in the sheep may be said to vary as the square of the concentration of sheep.

No additional comment on this factor is necessary, as its operation in the development of the disease is well known.

Susceptibility of the Sheep

(*a*) *Age.*—The importance of this factor may often be seen where ewes and lambs are running together and an outbreak of the disease occurs. Unless the intake of infective larvæ is progressing at an extraordinarily high rate the ewes are seen to acquire only a light infestation of the parasitic worms and remain healthy, although the lambs pasturing along with them carry tens

* The operation of this factor doubtless played a very important part in producing the widespread epidemic of parasitic gastritis which occurred during the winter of 1933-1934 following on the long drought that continued from the middle of the summer of 1933, through the autumn and well on into the winter. Species of *Trichostrongylus* were very largely responsible for the outbreaks that occurred at that time. It should be observed, however, that broken weather at the end of a period of drought—rain for a day or two followed by a continuation of the hot weather—destroys the accumulation of potential infection, as it causes the eggs to hatch and the larvæ to enter upon a stage in which they are susceptible to dryness.

† The outbreaks of parasitic gastritis that frequently occur during periods of drought are largely to be explained by the operation of this factor, and the early supplementing of the ration with concentrated foods is clearly indicated. Besides keeping up their powers of resistance this lessens the requirement for diligent grazing.

* This factor is probably responsible for the increased incidence of parasitic gastritis in Northumberland, following the extensive improvement of pastures by applications of basic slag. Although it is evident that the pastures are very greatly improved, the readiness with which parasitic gastritis develops renders some of them incapable of carrying even as many sheep as they were able to do when the herbage was poor, and farmers have been forced to graze a larger proportion of cattle. The greatly increased proportion of wild white clover in the pasture and the resulting increased transmissibility of the larvæ of the worms is probably responsible for this.

of thousands of worms and are dying of parasitic gastritis.

This resistance, or "immunity," is developed by adult sheep, partly as a result of early infection and partly as a result of their having reached a resistant age. The protection which it gives to the sheep is very effective, even against a heavy rate of infestation, but it is not an absolute safeguard, and may be forced to give way where the rate of intake of young worms is particularly high.[5]

(*b*) *Nutrition.*—The resistance may also be broken down where the sheep are receiving inadequate nutrition. Under experimental conditions this has been shown to have a very marked effect upon the rate at which an otherwise resistant sheep may acquire infestation, and also upon the rate of egg-production of the worms already present in the stomach. When the immunity of a sheep is broken down because of an inadequate diet, the worms that are present produce several times as many eggs as they do in resistant sheep.[1]

This nutritional factor comes into prominent play in times of drought when the pastures become very bare, and burnt by the sun. What little herbage is to be grazed by the sheep at such a time is comparatively innutritious, burnt grass being poor in protein and mineral constituents, while the proportion of stem to leaf in the herbage is increased (stem has less food value than leaf), and the sheep require to graze harder and for a longer period each day in order to find sufficient nutriment for maintenance requirements.

There can be no doubt whatever that during periods of drought the sheep in many parts of this country suffer from lack of proper nutrition, crowded, as they are, on what, in normal times, is very good pasture. As a result, the powers of resistance of the adult sheep become depressed, and young worms that are picked up along with the herbage are able to establish themselves in the sheep.

Summary and Conclusion

The factors governing the increase of parasitic worms to a disease-producing number fall into three categories: —

(1) *The Productivity of the Eggs of the Parasite* (*i.e.*, the proportion of the parasites' eggs that reach the infective stage on the ground).

(2) *The Transmissibility of the Infective Larvæ* (*i.e.*, the proportion of the infective larvæ picked up by the sheep).

(3) *The Susceptibility of the Sheep* (*i.e.*, the proportion of infective larvæ reaching the sheep's stomach that ultimately develop to maturity).

The operation of the factors is found to be influenced by weather conditions and agricultural practice, as follows:—

The productivity of the eggs is increased by ploughing and cultivation, by folding, superabundance of herbage and (of some species of the parasitic worms known as *Trichostrongylus*) by prolonged drought followed by a wet period; the transmissibility of the larvæ is increased by drought or shortage of herbage from some other reason, by a large proportion of clover in the pasture, or by a high concentration of sheep (overcrowding); and the susceptibility of the sheep is increased by malnutrition, as a result of drought, or from some other cause, and depends upon their immaturity, adult sheep being much the more resistant.

This investigation provides a satisfactory answer to several perplexing questions: the reasons for the widespread epidemic of the winter of 1933-1934; the reason for two kinds of outbreak that appear in sheep folded on arable lands ("auto-infestation," where they are allowed to run over land that they have already cleared, and "residual infestation," where the larvæ have remained in the soil from a previous folding of sheep); and the reason for the very acute nature of some of the outbreaks that occur on arable land. An indication is also given of the dangers of certain kinds of herbage and conditions of pastures. It is clear that there are other factors of which, as yet, we know nothing. Evidence of this is to be seen where one farmer keeps a high concentration of sheep to the acre without any apparent harm, while another farmer, with only half as many sheep to the acre, is continually in danger of an outbreak of parasitic gastritis. A continuation of this line of work may give some indication of what these factors are.

The control of this disease is still an urgent matter for scientific investigation, and is not likely to be satisfactorily achieved until some safe, cheap, effective and easily administered curative treatment is found. As has been explained, however, it may be avoided by preventing the worms from becoming too numerous, and our knowledge of the factors which govern their increase should be used to full advantage.

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[1]Taylor, E. L. 1934. The Epidemiology of Winter Outbreaks of Parasitic Gastritis in Sheep, with special Reference to Outbreaks which occurred during the Winter of 1933-1934. *J. Comp. Path. and Therap.*, **47**, pp. 235-254.

[2]Taylor, E. L. 1934. The Epidemiology of Parasitic Gastritis in Sheep. Observations on the relative Importance of the various Factors concerned in the Development of the Disease. *J. Agric. Sci.*, **24**, pp. 192-208.

[3]Mönnig, H. O. 1930. Studies on the Bionomics of the free-living Stages of *Trichostrongylus* spp.

Continued at foot of col. 1, *page* 1344.

Clinical Communications

AN EQUINE MONSTROSITY

W. GARDNER, M.R.C.V.S.
MAYBOLE

Subject.—Clydesdale colt foal.

History.—On February 23rd last, I was called to a three-year-old pedigree Clydesdale mare, said to be "pained and very uneasy."

Symptoms.—On arrival, I found her sweating and that she had been showing indications of colicky pains for an hour previous to my arrival. It was at once evident that she was preparing to "slip" her foal, having been stinted to a Clydesdale horse nine months previously. I made an examination *per vaginam* and found the two fore-legs well through the *os uteri*, with complete deviation of the head downwards and backwards towards the near flank. In a short time, after considerable difficulty, chiefly due to the unpreparedness of the mare, I corrected the presentation and effected delivery.

I subsequently removed the placental membranes, administered a sedative draught and inserted a pessary. The mare was given a pint of linseed oil next morning, put into light work in seven days, and made an uneventful recovery.

The foal was alive, but succumbed shortly after delivery.

I photographed the head of the foal and forwarded the specimen to the Glasgow Veterinary College. I am indebted to Professor H. I. Mitchell, of that College, for the following description of the features:—

"The nasal bones and premaxillæ were absent. The posterior part of the maxilla was present, as were the palatine bones, but there was no union between the bones of each side, which were directed upwards and everted. The ridged mucous membrane of the hard palate was present, but, of course, was split in midline in conformity with the fissure between the maxillary and palatine bones of each side. Thus both nasal cavity and turbinate bones were absent, the common opening being patent dorsally as far back as the cribriform plate of the ethmoid bone.

"The skin covering the maxillæ seemed to be a misplaced upper lip, being thick and pigmented and furnished with tactile hairs. The eyelids were lined with conjunctivæ, but there was no sign of an eyeball in the orbit. The ears were of unequal size, the left being much the larger."

The following are the measurements of the specimen: left ear, 10½ cms.; right ear, 7 cms.; breadth between the ears, 6 cms.; breadth across the cranium, 10 cms.; distance from middle of eyes to the poll of head, 10½ cms.; total length of head, 24 cms.; distance from poll to cleft of palate, 12 cms., and that from eye to eye, 11 cms.

According to the classification given in Fleming's "Veterinary Obstetrics," the specimen shows characters partly of perocephalus aprosopus (head with face missing) and partly of schistocephalus fissipalatinus et fissilabrus (split palate and hare-lip).

In conclusion, I may add that otherwise the foal was properly developed and all other organs of the body appeared normal in size and texture.

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and other parasitic Nematodes. *16th Rep. Direct. Veterinary Services and Anim. Indust., Union of S. Africa*, pp. 175-198.

[4]VEGLIA, F. 1915. The Anatomy and Life History of the *Hæmonchus contortus*. *3rd and 4th Repts. Direct. Veterinary Services and Anim. Indust., Union of S. Africa*, pp. 347-500.

[5]TAYLOR, E. L. 1934. Field Experiments on the Immunity of Lambs to Parasitic Gastritis caused by a mixed Infection of Trichostrongylid Nematodes. *J. Helminthol.*, 12, pp. 143-164.

The mare was bred by the owner; had been stinted in the first week of the previous May—since when she was in regular light agricultural work—and never had a previous ailment of any nature nor ever sustained injury at any time.

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CALCULI CAUSING COMPLETE COLONIC OBSTRUCTION IN A MARE*

T. J. MARGARSON, M.R.C.V.S.
Stroud

Subject.—Seventeen-year-old chestnut hackney mare.

No previous history, except an attack of hip lameness about five years ago.

Symptoms.—Abdominal pain. Respirations at first good, later becoming fast and shallow. Temperature normal at the outset, rising to 103·8°F.

Treatment.—Istin given. No result. After 24 hours arecolin administered. Pain increased and the animal was eventually shot after two days' pain.

Post-mortem.—Calculi were found, as shown in photograph (foot-rule in background). These were present in the large colon, except one which was in the small colon and causing complete obstruction, with peritonitis. Calculi weighed in pounds and ounces: 4—4, 3—5, 1—14, 1—12, 1—7, 1—10, 0—8. Total weight, 14 lb. 12 ozs. The calculus weighing 1 lb. 10 ozs. was the cause of the obstruction.

* Case reported to the summer meeting of the Mid-West Division, N.V.M.A. at Stroud, August 22nd, 1935.

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METRORRHAGIA IN A CAT

T. F. PRIME, M.R.C.V.S.
Upper Norwood

One morning at about 10 o'clock I received a note to say that an eight-months-old Siamese cat, which was in kitten, had a little bright red blood coming from the vagina and requesting me to send some medicine for her. Accordingly, I sent an ergot mixture to be given, to stop the bleeding.

A 3 p.m. I received an urgent message to call at once and see the cat. On arrival, at about 3.30 p.m., I found that the discharge of blood had ceased and that actually only a comparatively little had been passed. The animal was extremely prostrate, the abdomen was swollen and there was great pain on pressure. There was a "running down" pulse and the cat felt cold. The mammary glands were small and there was no evidence of swelling or of the presence of milk.

The animal died about 4 p.m., and on making a *post-mortem* examination I found there were five fœtuses, aged about four to five weeks. They were detached from the walls of the horns of the uterus, and the liquor amnii was mixed with a large quantity of bright red arterial blood. There was no evidence whatever of the animal having aborted a kitten or shown any sign of parturition, nor any history of an accident which would account for the condition.

The cat seemed perfectly well and in good health the night before being taken ill.

Abstracts

[On the Pathology and Treatment of Hæmoglobinuria paralytica in the Horse. Grzycki, S. (1934.) *Berl. tierärztl. Wschr.* **50.** 48. 789-790.]

During work, the percentage of inorganic phosphorus in muscle increases, in consequence of the decomposition of the muscle phosphagen into creatin and phosphoric acid. Simultaneously, lactic acid is formed, in quantities corresponding to the decomposed phosphagen. During the period of rest following the muscular activity, the chemical composition returns to normal and the phosphagen is re-formed from creatin and phosphoric acid.

The urine of horses affected with hæmoglobinuria contains an abnormally high percentage of creatinin. From the study of the biochemistry of the muscles and blood when the horse is at rest, at work and when suffering from the disease, the conclusion has been drawn that the origin of this is increased breakdown of phosphagen or defective re-synthesis.

The following table compares certain of the blood constituents of the horse in health (at rest) and in disease:—

	Glucose %	P mg. %	Creatinin mg. %
Normal	0·077	2·92	2·64
Hæmoglobinuria	0·214	6·30	8·22

	Lactic acid. mg. %	Remaining nitrogen mg. %	Alkali reserve CO_2 vol. %
Normal	10·8	34·0	65 c.cms.
Hæmoglobinuria	18·0	44·1	Not given

The above figures show a deviation from normal of glycolysis, and of the decomposition and re-synthesis of phosphagen.

In the muscles, the following is found:—

	Lactic acid %	Total P mg. %
Normal	0·120	80·7
Hæmoglobinuria ...	0·130	55·8

	Inorganic P mg. %	Phosphagen P mg. %
Normal	25·4	55·3
Hæmoglobinuria ...	27·9	27·9

The disturbance of the phosphagen decomposition and its re-synthesis is again shown by the above.

For comparison, the analyses of the muscle and blood at rest and work are given (rabbit):—

Muscle.	Lactic acid %	Total P mg. %	Inorganic P mg. %	Phosphagen P mg. %
Rest ...	0·110	86·0	33·0	53·0
Work...	0·226	83·1	51·4	31·7

Blood.	Glucose %	Lactic acid mg. %	P mg. %	Creatinin mg. %
Rest ...	0·103	20	4·4	3·2
Work ...	0·118	114	4·8	3·6

The principal biochemical features of hæmoglobinuria, the writer points out, are: (*a*) the increase of glucose, phosphate and creatinin, and the only very slight increase of lactic acid, in the blood; (*b*) the fall in total phosphorus and phosphagen in the affected muscles.

The above facts were obtained by the writer from Polish literature. The marked hyperglycæmia suggested to him the use of insulin in the treatment of equine hæmoglobinuria.

Two cases were treated by the injection of 200 units of insulin. Analysis of the blood showed a rapid change back to normal. The following is the analysis in one of the cases:—

	Glucose %	Lactic acid mg. %	Inorganic P mg. %
Before insulin	0·230	32·0	6·6
After 1 hour	0·187	22·0	4·4
„ 2 hours	0·176	17·3	4·1
„ 12 „	0·085	12·5	2·3

	Creatinin mg. %	Remaining nitrogen mg. %	Alkali reserve CO_2 vol. %
Before insulin	8·18	59·0	36·0
After 1 hour	5·80	49·8	41·7
„ 2 hours	5·29	47·1	46·2
„ 12 „	2·86	42·9	51·0

The return of the blood to normal was accompanied by improvement in the symptoms, and both cases made a rapid recovery after a single injection of insulin. E. W. A.

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[The Muscles of Phillips and Thiernesse in Equines. Bressou, M. C. (1935.) *Rec. Méd. vét.* **3.** 1. 5-10.]

The muscle of Phillips lies on the deep face and external border of the muscular portion of the extensor pedis. Its tendon enters the sheath of the tendon of the latter muscle, and there unites with the tendon of the lateral extensor.

Sometimes it remains single inside the extensor pedis sheath, and terminates by becoming inserted into the first phalanx. In other cases it divides into several portions, which are inserted into the large metacarpal and proximal end of the first phalanx.

In at least 25 per cent. of horses, the muscle is lacking. Often its muscular portion is atrophied and its tendinous portion is a few strands of tissue, and minute dissection is necessary for its detection.

In a few cases, the muscle and its tendon are well developed. It is then noticed that the lateral extensor is atrophied. In three cases of complete absence of the latter, the Phillips muscle was of enormous size, by way of compensation. On account of these observations, the author is inclined to think that the Phillips muscle represents part of the lateral digital extensor, *i.e.*, the extensor of the lateral fingers of the hand.

The conventional view is that the Phillips muscle is an integral part of the common extensor, and hence it is usually called the radial head of the extensor pedis, which represents the common extensor in the horse.

The muscle of Thiernesse (commonly called the ulnar head of the extensor pedis) consists of a small strip of muscle and a thin tendon, running obliquely under the lateral extensor of the phalanges and of the muscle of Phillips. The tendon enters the extensor pedis sheath and unites with its tendon in the upper metacarpal region.

This muscle is now generally considered to consist of two muscles, usually joined in quadrupeds, but independent in man. They represent the long extensor of the thumb and the extensor proprius of the index finger.

It is very inconstant and in most horses it is absent. Frequently, the tendon preserves its independence, and terminates in the fetlock region.

Martin records a case in which the muscle had two tendons, representing the thumb and index tendons. The Phillips muscle terminated in three tendons. The whole, therefore, reproduced exactly the ancestral pentadactyl system.

Boussou also records a case in which there were two tendons, terminating on the internal metacarpal, and on the first phalanx.

E. W. A.

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[Simultaneous Fracture of Both Pedal Bones in a Horse. Oxspring, G. E., and Woodland, P. F. (1934.) *J. Roy. Army Vet. Corps.* **6.** 2. 92. (2 photographs.)]

A seven-year-old mare, while playing polo, suddenly became severely lame in both fore feet, and a diagnosis of hyper-acute laminitis was made. After three weeks, slight improvement had occurred and a radiological examination of the feet was carried out. It was then seen that the pedal bones were fractured in an identical manner.

She improved slowly, but as she was still unsound after three months she was destroyed.

The *post-mortem* examination confirmed the X-ray evidence, and showed that, while firm union had taken place, in both bones some displacement had occurred, thus rendering the articular surfaces irregular.

E. W. A.

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[Carcinoma of the Large Intestine in the Horse. Schenke, H. (1934.) *Berl. tierärztl. Wschr.* **50.** 42. 692-693. 2 figs. (9 refs.)]

Two cases of adenocarcinoma of the large intestine are described. In the first case the tumour had arisen from either the colon or cæcum (due to the extensive local spread it was impossible to determine) and both these parts were firmly bound together by tumour tissue. The structure was that of a typical intestinal adenocarcinoma, although an unusual feature was the presence of bone formation in the stroma. By necrosis of the tumour a fistula had been established between the colon and cæcum. The second case is a brief description of a museum specimen of an adenocarcinoma previously labelled polynosis of the large intestine.

J. R. M. I.

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[Tumours (Carcinomata and Endotheliomata) of the Serous Membranes of Fowls. Jármai, K. (1935.) *Deuts. tierärztl. Wschr.* **43.** 11. 164-167.]

The author commences by stating that multiple tumours of the peritoneum, pleura and omentum occur frequently in animals and have often been classified as endotheliomata and, by some authorities, as carcinomata. [The term endotheliomata was used in human cases and adopted in veterinary pathology because the cells lining these membranes were considered to be of the same nature as vascular endothelium, but the question of the origin and histogenesis of primary serosal tumours has ever been a subject of controversy and is still debatable. Apart from this, no less an authority than Willis (1934) states that, while the possibility of primary tumours of coelomic membranes occurring cannot be denied, the large majority of cases are undoubtedly secondary to some undiscovered primary tumour in the neighbouring viscera. The diagnosis of primary serosal tumours is often made on wholly inadequate grounds and with insufficient appreciation of the frequency with which small primary carcinomata yield massive and widespread metastases. Before a diagnosis of such can be accepted, a painstaking search must be made of viscera to exclude this possibility and a mention made of this in the report. Such statements are justifiable in the case of human

pathology as can be easily seen by the records in the literature of such tumours or by examination of *post-mortem* protocols from any pathological institute, and no doubt the same applies to animal cases. Finally, the use of the term endotheliomata or often mesotheliomata appears to be unnecessary because it has been stressed by numerous authorities that such tumours differ neither in behaviour nor structure from the well-known serosal carcinosis. In other words, in the opinion of many pathologists the existence of endotheliomata as a definite tumour type has never been completely proved.] With these facts in front of us it is of interest to note the recording of peritoneal tumours in the domestic fowl, which the author considers are fairly common. He states that, although many are undoubtedly implantation spread from primary ovarial neoplasms, true endotheliomata also occur. In support of this statement a series of seven peritoneal carcinomata and two primary endotheliomata are described in detail regarding anatomical localisation, spread and histology.

J. R. M. I.

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[The Anti-hæmorrhagic Vitamin of the Chick. Dam, H. (1935.) *Biochem. J.* **29.** 6. 1273-1285.]

The nature and distribution of the so-called anti-hæmorrhagic factor of the chick has been investigated. The vitamin is fat soluble but is distinct from vitamins A, D and E. It resembles E in its solubility and stability to heating in air but the deficiency is not completely cured by the administration of large quantities of wheat germ oil (a potent source of E). The richest sources of this new vitamin, called vitamin K, include hog-liver oil and hemp seed. Egg yolk, tomatoes, kale, oats and wheat germ contain moderate amounts but rice, maize and rye contain little, if any. [It will be recalled that the condition resulting from the absence of this factor resembles scurvy with a tendency to large hæmorrhages. It is not cured by the administration of vitamin C.]

W. R. W.

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[The Presence of Bacteria in Alcohol. Schoop, G. (1934.) *Deuts. tierärztl. Wschr.* **42.** 47. 752-754.]

Following reports of the isolation of living bacteria from alcohol, the author has examined 20 samples from various sources. Preliminary experiments showed that at least 10 per cent. of alcohol must be added to culture media in order to inhibit bacterial growth. Of the samples examined, 68·8 per cent. contained bacteria, both anærobic and ærobic forms being isolated. It appears that alcohol does not possess the power of self-sterilisation even in as high concentrations as 70 to 96 per cent. and its disinfectant properties are much smaller than is generally supposed. Commercial alcohol, which in any case is not considered bacteria free, must be sterilised before use. This may be accomplished by passing it through a bacterial filter. The author points out that alcohol is an uncertain steriliser for instruments and the use of alcohol for disinfecting the hands, operation sites or wounds is of doubtful value.

J. A. N.

Reports

AGRICULTURAL RESEARCH IN SCOTLAND IN 1934*

Each year there appears in the *Transactions of the Highland and Agricultural Society of Scotland* a brief summary of work at the Scottish Agricultural Research Stations during the year. This brings the work of these research centres to the notice of the agriculturist, and readers desiring fuller information on any particular subject are advised to communicate with the Director of the Institute concerned.

Research work on plant breeding is carried out at Craig's House, Corstorphine, Edinburgh, where work is in progress with oats, potatoes, herbage plants and swedes. The Macaulay Institute for Soil Research at Craigiebuckler, Aberdeen, deals, amongst other things, with soil fertility investigations and carries out analysis of soil samples for farmers who wish advice on problems of manuring and liming.

The works that are probably of most direct interest to the veterinarian are those dealing with animal genetics, animal disease and animal nutrition. The Institute of Animal Genetics, Edinburgh, has an experimental farm on which the principal investigation relates to the inheritance of milk yield and other productive qualities in cattle. The breeds kept are Ayrshires, dairy Shorthorns, and beef Shorthorns. Matings are being made between beef and dairy Shorthorns, as well as between beef Shorthorns and Ayrshires. The first of the heifers born on the farm are now coming into milk. The work is progressing according to plan but it will be many years before results of statistical significance can be obtained. An experiment is in progress to determine the practical value of the progeny test as a means of

* Notice prepared from a review of this subject appearing in the *Transactions of the Highland and Agricultural Society of Scotland* (1935), Vol. xlvii.

improving the productivity of dairy cattle.

In connection with pig breeding, there is evidence of considerable variation in the amount of food consumed by different litters of pigs in relation to their live weight gain. The progeny of one boar averaged as little as 3·13 lb. of meal per lb. of live weight gain, while the progeny of another averaged as much as 3·9 lb. of meal per lb. of live weight gain. The basis of the experiment is what is known as diallelic-crossing. The pregnant mare appears to be a source of sex hormones and for this work and investigation into methods of diagnosing pregnancy a small stud of Shetland ponies is maintained. A careful selection has been made of the Rex breeding stock of rabbits. By this means the general vitality of the breed has been greatly improved, and it can now be claimed that a strain is being established which is as hardy as the normal rabbit. The rapidity of moult is a definitely inherited character, the offspring of rapidly moulting parents being themselves rapid moulters, while slowly moulting parents beget slowly moulting offspring. Working with poultry, genetical studies are being carried out which include specifically the problem of egg size, the absence of moult (with which are associated periods of continuous egg production over two years) and long continued persistency of production. Occasionally birds are found which lay at an economic level for at least four years. These birds are being used to determine whether such a characteristic is inherited, and, if so, the mode of its transmission from parent to offspring. Other studies in progress are concerned with the relation of the endocrine glands to the life of the individual. Observations on the castrated fowl have shown that up to 40 weeks of age they do not become heavier than the normal male when both are raised on normal diet. This is contrary to the general impression existing among poultry farmers. From a study of the relation of certain glands to plumage colour in the Brown Leghorn, a test for pregnancy in the mare has been devised which is rapid and convenient. Injection of urine from a pregnant mare will cause the appearance of red pigment in the breast feather of the capon. If the mare is not pregnant, the feathers, normally completely black, are not affected.

The Animal Diseases Research Association deals with the investigation of animal disease. The Association reports that a preventive vaccine for the control of louping-ill in sheep has been devised and it is hopeful that this vaccine will shortly be issued as a commercial product. The causal organism of tick-borne fever is being studied. It is believed that certain cytoplasmic inclusions, which occur in the polymorphonuclear cells of the blood and spleen represent the causal organism. In connection with braxy, experiments to compare the value of single and double vaccination have been in progress and the results indicate that the single inoculation method furnishes an adequate degree of protection. The toxin of *Cl. welchii* type D has been demonstrated in filtrates of the intestinal contents of certain acute cases of grass sickness in horses. The significance of these findings is being actively investigated. Research into contagious bovine abortion has been undertaken. A systematic study of the disease in small laboratory animals is in progress with a view to testing the efficacy of methods of prevention by means of dead vaccines. The possible association of enzoötic abortion in ewes with dietary deficiency is being investigated. It has been shown that magnesium deficiency in the blood is a constant feature of lactation tetany. Scrapie in sheep continues to be studied. Experiments are in progress to test the value of various combinations of chemical substances as repellants for blow-flies and ticks.

The work of the Rowett Research Institute at Aberdeen centres very largely round the problem of the influence of nutrition on the incidence of disease in both the animal and human world. The results of these investigations are published in appropriate scientific journals and do not appear in this report, but the work at the Duthie Experimental Stock Farm attached to the Institute is summarised. The efficient utilisation of home grown grass and fodder crops is a problem which has been receiving considerable attention. It has been found that a certain amount of pasture can be saved without loss of milk yield by controlling the length of the grazing period. The most efficient method of conserving surplus grass for winter use is now known to be artificial drying. There is practically no loss of the nutrients in the original grass. There is no significant difference in the live-weight gain in cattle fed on linseed cake as compared with cattle fed on earthnut cake. Feeding experiments with pigs, poultry and sheep are also in progress.

At the West of Scotland Agricultural College research work on the production and storage of dairy products and the feeding and management of dairy cows is carried out. The cause of hoven or bloat in cattle is being investigated. Saponin appears to be the chief agent in producing bloat and it has been found that the saponin content of wild white clover is highest during the bloating season. The content of cyanoglucosides also appears to run somewhat parallel to that of the saponins. A deficiency of lime in the soil appears to be a contributory factor in the cause of bloat, while lack of balance in other constituents of the soil may also be a predisposing factor.

At the Hannah Dairy Research Institute, Kirkhill, Ayr, work on the nutrition, milk secretion and genetics of dairy cows is in progress and the importance of quality as distinct from quantity of protein in the ration of milking cows has been established. Between 1929 and 1932 an experimental scheme for the eradication of tuberculosis was organised in a selected area in Ayrshire. In 1932 20 out of the 28 herds included in the area were completely free from infection, and the degree of infection in the remaining co-operating herds has been reduced from 52 per cent. to 24 per cent. A resurvey of this area is now being carried out. The Institute is co-operating with the Scottish Committee on Contagious Bovine Abortion in an investigation of the efficacy of segregation methods in controlling the spread of contagious abortion. Preliminary work on the control of mastitis by the use of a special diagnostic test for identifying infected animals is in progress, and the efficacy of various curative treatments is also being investigated. The effect of pasteurisation on the nutritive value of milk and the economic aspects of pasteurisation in relation to producers' and consumers' prices is also the subject of investigation. Work on the defects in the keeping qualities of milk products is also being carried out.

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PUNJAB CIVIL VETERINARY DEPARTMENT

REPORT FOR THE YEAR 1933-34*

The report is submitted by Mr. T. F. Quirke, the Director of Veterinary Services, who was in charge throughout the year. The District staff consisted, in addition to the Director, and the Veterinary Investigation Officer, of 20 officers and 356 subordinates. At the Punjab Veterinary College 12 officers were employed. The Minister of Agriculture pays a tribute to the admirable work of the Director and his staff.

Animal Husbandry.—This is a great feature of the report and progress in improving the breed of cattle was maintained, though the people have yet to learn the importance of proper care and nourishment. It is admitted by the Ministry, however, that, since the post of Livestock Officer has been held in abeyance, the rate of progress has slowed down.

The Hissar Cattle Farm is the main centre of cattle breeding and 431 stud bulls were issued during the year. In addition, 14 donkey stallions, 65 male goats and 223 rams were issued. The stock at the farm numbers some 8,500 head. Owing to the precarious rainfall it is necessary to maintain a large reserve of fodder and there is an irrigated area of 5,000 acres for the cultivation of fodder crops. Attention is being paid to improving the milk yield of the cows of the Province by selective breeding. Horse and mule breeding, buffalo breeding, camel breeding and sheep and goat breeding are included in the activities of the Department, of which interesting details are given in the report.

Disease.—The year was an unhealthy one, rinderpest being responsible for the largest number of deaths. *Surra* was also very prevalent. It is pleasing to record that the Department is being increasingly successful in treating this disease. There were no less than 6,541 cases treated with naganol at 30 centres with great success. Experiments are being made with regard to the protective value of the drug. Preventive inoculation and vaccination were conducted on a large scale against rinderpest, hæmorrhagic septicæmia and blackquarter.

There were 294 veterinary hospitals and 302 outlying dispensaries at work, and the villagers are clamouring for more. More than 5,000 castrations were performed by the subordinate veterinary staff.

Punjab Veterinary College.—The number of students who seek admission has fallen. The average daily hospital attendance has increased considerably, it being recorded that on one day 109 out-patients attended the hospital clinic. One hundred and eighty skiagrams were taken during the year.

The Pathological Section had a busy year. Research work included an investigation of encephalomyelitis in equines (for the first time identified in India), granulomatous dermatitis of buffaloes, canine fevers, rabies vaccination and the testing of rinderpest vaccine. The Surgical and Medical Sections of the College were not behindhand in research and several interesting publications of work are reported.

G. K. W.

* Annual Report of the Civil Veterinary Department, Punjab, for the year 1933-34. 35 pages. 4 photographs, 12 tables. [8vo.] (The High Commissioner for India, Aldwych, London, W.C.2. Price 2s. 2d.)

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CYPRUS VETERINARY SERVICE

REPORT FOR THE YEAR 1934

(R. J. ROE, M.R.C.V.S., D.V.S.M., Chief Veterinary Officer)

The service is responsible for the control of contagious diseases, the inspection of livestock prior to export, the quarantine control of imported animals, the inspection of dairies and cowsheds, the registration of stallions under the Horse Breeding Law, and the supervision of meat inspection in the principal towns of the colony. There are no private veterinarians, so that the staff of the Service also renders advice

and assistance to stock-owners on non-contagious diseases.

The principal contagious diseases, in the order of frequency of outbreaks for the year, were: sheep-pox, contagious pustular dermatitis of sheep and goats, anthrax, parasitic gastro-enteritis, external parasitism, goat-pox, tetanus, piroplasmosis of sheep (suspected) and black-quarter (suspected). There was a considerable reduction in the incidence of anthrax over previous years, thanks to the Service's campaign of immunisation. Sheep-pox is being controlled by vaccination and quarantine with satisfactory results. Contagious pustular dermatitis was prevalent in the early months of the year, but it caused no mortality. Parasitic affections were prevalent in all species of animals. Mange in camels is common, but there is none in horses and sheep. Follicular mange is common in dogs; it also affects goats. Lice, keds and ticks are common. Habronema is the most serious parasite of the horse and summer sores due to its larvæ are of frequent occurrence in donkeys. Parasitic gastritis of sheep and goats is treated with copper sulphate; parasitic bronchitis with intratracheal injections, and liver-fluke disease with carbon tetrachloride. *Œstrus ovis* causes much economic loss in sheep.

The infectious diseases of poultry encountered were: fowl cholera, fowl-pox, fowl paralysis, fowl typhoid, spirochætosis, tuberculosis, coccidiosis and helminthiasis. The laboratory of the Service was chiefly engaged in routine duties, of which anthrax-vaccine production occupied most time.

W. K.

FAILURE TO RECORD MOVEMENTS OF ANIMALS

In imposing fines amounting to £145—£5 for each animal involved—on a farm bailiff of Cardiff for contravention of the Movement of Animals (Records) Order, the Chairman of the Whitchurch Bench said that they regarded the case as a very serious one and added "foot-and-mouth disease has cost the country a lot of money recently."

The defendant's solicitor explained that his client was employed by Mr. Murphy, a cattle dealer in Ireland and Great Britain. The cattle were pastured at Wauntreoda Farm, and it was the defendant's duty to look after the cattle there and to make the necessary records regarding them.

These offences occurred in connection with animals which had been moved to markets for sale. A number of animals were sent to a particular market. They were not all sold.

Some were brought back, and in the records appeared the number of animals that had been sold, but the animals that had not been sold were not entered owing to the idea in defendant's mind that if the animals were brought back within 24 hours there was no necessity to record their movements.

N.V.M.A. Divisional Reports

CENTRAL VETERINARY SOCIETY

ANNUAL GENERAL MEETING

A "Clinical" Interlude

Never has the very proper view, that the Presidency of a veterinary society should be awarded for service, been more enthusiastically espoused and acted upon than was the case at the Annual General Meeting of the Central Division, N.V.M.A., at the Conway Hall, on October 3rd, 1935, when Captain J. F. Macdonald, who for so many years and with such ability, guided the affairs of the Society as its Honorary Secretary, was elected to preside over its deliberations during the coming year.

Those also present—who thus so pleasingly expressed the feelings of every Fellow towards Captain Macdonald—were the retiring President (Captain L. S. Balls), Mr. W. Brown, Mr. H. E. Bywater (Hon. Secretary), Captain J. C. Coleman, Major W. Denington, Captain H. S. A. Dunn, Miss C. M. Ford, Mr. C. Formston, Mr. L. Gabriel, Lieut.-Colonel H. Greenfield, Messrs. H. D. Jones, Cyril King, Neville King and Herbert King, Major C. J. R. Lawrence, Miss M. V. Levie, Dr. J. McCunn, Mr. J. W. McIntosh, Lieut.-Colonel W. S. Mulvey, Mr. W. Perryman, Veterinary-Colonel G. Rees-Mogg, Miss K. W. Shedlock, Captain R. J. Stow, Major F. J. Taylor, Captain W. K. Townson, Professor J. G. Wright and Professor G. H. Wooldridge.

The minutes of the previous Annual General Meeting and of the last ordinary meeting (held in June, at the Royal College of Surgeons), having received publication in *The Veterinary Record*, were taken as read and were signed as correct.

Correspondence.—(1) Communications apologising for their inability to attend from Major Colin Davenport, Sir Frederick Hobday, Mr. A. J. James, Major Hamilton Kirk, Mr. G. H. Livesey, Professor James Macqueen and Dr. A. L. Sheather.

(2) From the N.V.M.A., enclosing the report of the Association's Committee on Fur-bearing Animals, presented to the Council of the "National" in July.

(3) From the N.V.M.A., intimating that for the purpose of appointing representatives to the Council of the "National," only those members of the Division who are also members of the Association should be taken into account in determining the number of representatives allowed.

The Hon. Secretary reported that accompanying the above communication was a list of members of the Society who were not also members of the parent body. To each of those members a letter had been sent stressing the desirability of their joining the "National" and advising them of the privileges membership carries with it.

(4) From the N.V.M.A. relative to the Dalrymple-Champneys Prize, setting forth the rules governing its award and intimating the manner in which nominations shall be received.

The rules having been read by the Hon. Secretary, Professor Wright said that he believed that the primary object of that communication was the receipt of names from Divisions of the "National"; he therefore felt that something should be done by that Society with a view to the nomination of persons whom they considered suitable.

Professor Wooldridge thought that the attention of the Divisions was being drawn to the award because last year there was insufficient interest taken in it, and it was felt that getting the matter noised abroad amongst the Divisions was likely to bear good fruit in bringing forward names of worthy recipients. If the Divisions sent up nominations, that would not prevent the sending forward of nominations by individuals.

He proposed: "That a committee be appointed to consider whether or not they think that nominations might be sent forward by the Central Veterinary Society."

Professor Wright having seconded the proposition, the Hon. Secretary enquired if Professor Wooldridge would be agreeable to that committee consisting of the Council of the Society.

Professor Wooldridge expressed assent and the proposition was carried unanimously.

(5) From the National Horse Association—a reasoned statement of the case for opposition to the Minister of Transport's threatened banning of the horse from the streets of London and other large cities.

The Hon Secretary said that, on behalf of the Society, he had already sent a letter on those lines to the Minister of Transport.

The text of the Hon. Secretary's letter is as follows:—

"The Central Veterinary Society, representing the great majority of veterinary surgeons in the Metropolis, has had under careful consideration the statement reported to have been made by you (on July 24th, 1935) in the House of Commons to the effect that it was desirable to accelerate the freeing of the streets from horse-drawn vehicles, that you were prepared to consider proposals to this end; that it was the practice of your Department to approach on all suitable opportunities the principal users of horse-drawn vehicles with the object of achieving the more rapid substitution of motor for horse-drawn vehicles in the Metropolis; and also a statement that you have under consideration a scheme whereby, after a period of years, no more horse-drawn vehicles would be allowed on the streets of the principal cities.

"This Society feels that such action is a very serious injustice to a large section of the community, and would respectfully draw attention to the fact that the congested state of the roads is the direct result of the increase of motor traffic which is of fairly recent origin as compared with horse-drawn traffic, and that any banning of this latter form of transport would not have the desired effect, even if it did result in some transient relief. The present congestion is entirely due to recent developments in motor transport and the remedy, we respectfully submit, should be by methods directed to the control of this development.

"Horse-drawn traffic is, for certain types of work, much more economical than motor transport, and its abolition would place an unbearable financial burden on certain trading concerns who rely on horse-drawn vehicles.

"Many small traders, especially in the East-end of London, consider that the enforcement of the proposed measures would mean nothing short of financial ruin for them, with which view we, who know their circumstances so intimately, feel bound to agree.

"The repercussion on agriculture would also be little short of calamitous, especially to the small farmer who depends on horse-breeding and the production of horse fodder and bedding as branches of his activities essential to co-relation of the proper and profitable conduct of mixed farming."

Mr. Perryman thought that, if possible, the Society should take some strong action with regard to the suggested abolition of the horse from the London streets. As one of their representatives to the National Horse Association he could say that at a meeting on September 23rd that association dealt with the position very strenuously, but they wanted the support of all other bodies interested. That Society was especially interested in the preservation of the horse on the streets of the City of London, and representations made by it would carry, he thought, particular weight.

With that object in view, he begged to propose the following resolution:—

"That we, the members of the Central Veterinary Society (London), strongly protest against the suggested ban being placed upon the use of horses in London and other large cities.

"The abolition of horses would be unfair to horse transport owners and would entail great hardship and unemployment to a vast multitude of skilled and unskilled people.

"The abolition of horses from towns would be disastrous to the most important industry of the country, *viz.*, agriculture, and its repercussion would be felt in all industries whose existence is dependent upon the use of the horse. We urgently request that no such order be allowed to come into operation, as we are confident that it would prove a national calamity."

Continuing, Mr. Perryman said that he would propose further, that, in the event of the resolution being carried, copies should be sent not only to the Minister of Transport, but to the Ministry of Agriculture and to the London County Council.

Mr. McIntosh said that, while everyone would be in the fullest sympathy with Mr. Perryman's remarks and with the terms of the resolution he had proposed, he did not think that any good purpose would be served by sending anything forward from the Society at that moment, because, as they would doubtless all be aware, the Council of the National Veterinary Medical Association, which represented its constituent Divisions, had already sent in a very strong protest to the Minister.

Mr. Perryman replied that he was not aware of that, nor, at the time he framed his motion, that Mr. Bywater had also written so strongly on the matter. Under those circumstances he would withdraw his resolution, as he felt that the steps taken would meet the case so far as that Society was concerned.

A motion by Mr. McIntosh: "That it is unnecessary for this Society to do more than has already been done by the Hon. Secretary, and that the matter be left in the hands of the parent body," was seconded by Captain Townson and carried unanimously.

At this point Mr. Formston rose to express the hope that, at future meetings of the Society at which papers were read, should the essayists fail to reply to the points raised in the discussion, their omissions should be pointed out to them by the President, or the questioners, in order that no important points should go unanswered and that, in consequence, the report of the proceedings might thereby be made more complete and therefore of greater value.

Election of Fellow.—Mr. Geo. M. Vincent, 2A, Egmont Road, Sutton (proposed by the President, seconded by Captain J. F. Macdonald) was unanimously elected to Fellowship of the Society.

Report of the Council and Financial Statement

The Hon. Secretary now read the report of the Council of the Society for the year 1934-35. This was as follows:—

> Six Council meetings were held during the session under review, at which there was an average attendance of 13.
>
> The Annual General Meeting, a dinner-dance and seven Ordinary General Meetings were held, at which meetings an average attendance of 33 Fellows and six visitors was recorded in the attendance book. The attendance of Fellows is practically constant with that of last year (34), but the number of visitors shows a decrease of three on that during the previous year, which year, however, showed an increase of seven in the number of average attendances of visitors during the preceding year.
>
> Fourteen new Fellows were elected during the year—a decrease of eight as compared with 1933-1934—and two during 1932-1933. Five Fellows died during the session and one resigned (the previous year one died and six resigned). The total membership is, therefore, 273: an increase of eight.
>
> The following papers were read and discussed:—
>
> "The Veterinary Aspect of Parasitology," by Mr. E. L. Taylor.
>
> "Distemper of the Cat," by Major Dalling.
>
> "The Veterinary Surgeon in the Witness Box," by Dr. F. Bullock.
>
> "The Economics of Feeding the Commercial Horse," by Mr. H. D. Jones.
>
> "Caries and Paradontal Disease in Animals," read at the Royal College of Surgeons by Sir Frank Colyer.
>
> Following Sir Frank Colyer's paper the Fellows were conducted over the museum of the Royal College of Surgeons under the very able direction of Sir Frank Colyer. Our thanks are due to Sir Frank and the Curator of the Museum for this privilege, which was much appreciated.
>
> One evening was devoted to discussing certain topics of clinical interest.
>
> The thanks of the Society are also recorded to Sir Frederick Hobday and the Governors of the Royal Veterinary College for kindly placing at our disposal the facilities for holding our Annual General Meeting at the College.
>
> Lastly, the hearty thanks of the Council are tendered to those Fellows who brought *post-mortem* specimens and cases of interest before the meetings for discussion.

The report of Council was adopted without discussion.

In presenting his Financial Statement (which also was approved) the Hon. Treasurer (Dr. J. McCunn) said that the only comment he had to make on the statement before them was that during the past year he had been unable to pay the money promised to the R.C.V.S. for the Library Endowment Fund—£25. He hoped to be able to do that this year if all the Fellows would pay up what they owed in subscriptions; in fact, if that were done, the Society could pay over the full amount promised: £50.

Presidential Medallion.—The retiring President (Captain L. S. Balls) now rose to say that the Council of the Society had kindly intimated their willingness to accept at his hands the

medallion he held, which he desired to present to the Society, to be worn by successive Presidents, as a token of the honour he had felt it to be to preside over its deliberations during Jubilee Year. (Applause.) He hoped that he might be allowed to suggest that each President, during his year of office, might add a bar to the ribbon bearing the medallion.

The Hon. Secretary said that he would like formally to propose that the Society accept the medallion from the President and accord him a hearty vote of thanks for his generosity in presenting it.

The proposition was carried with acclamation, and Mr. Cyril King, speaking as the immediate Past President, said that he had been asked by the Council to invest the reigning President with that presidential medallion. His pleasure in complying with that request was much enhanced by the fact that its recipient, Captain Balls, was a neighbouring practitioner to him and also for the reason that, as they were already aware, the reigning President happened to be the donor of that medallion to the Society.

As their President's reign was drawing to a close, he must express the regret they all felt that Captain Balls would have so few opportunities for wearing it, but in decorating him with that medallion he desired to take the opportunity of adding his thanks to those already formally accorded the President for presenting that gift to the Central Veterinary Society. (Applause.)

Captain Balls returned thanks in suitable terms.

Election of Officers

President.—The Chairman, after intimating that consideration of the above was the next business before the meeting, said that he had much pleasure in informing them that, at the meeting of Council which had preceded that gathering, it was unanimously decided that Captain J. F. Macdonald should be their next President. (Loud applause.) It needed no words of his to indicate how glad they were that Captain Macdonald had been chosen: he had been the efficient Secretary of that Society for many years, having, indeed, carried out his duties in a noble way and his services had been of great value to that Society. (Hear, hear.) For his part, he regarded Captain Macdonald as just the man to follow him, and he had great pleasure in inducting him to that high office and in decorating him with the presidential medallion. (Applause.)

Mr. McIntosh expressed the hope that he would be allowed to say a few words in seconding the proposition which had been so ably put by their retiring President and which had been so enthusiastically endorsed by the meeting. He had known Captain Macdonald for longer than anyone in that room: it was over 30 years ago that he came to him as a student and for many years he was a valued assistant. He was sure that Captain Macdonald would carry out the duties of the position of President as ably as he had for so long fulfilled those of Hon. Secretary—which was saying much—and he need hardly say with what great delight he regarded Captain Macdonald's election to the presidential chair of the Society he had served with such ability and wholehearted enthusiasm. (Applause.)

Captain Coleman, supporting, spoke of Captain Macdonald's work as Secretary as setting an example for all secretaries of professional societies to follow.

The President: "If there are no other nominations" ["None!"], "I put the matter to you. . . . There are, of course, none, and I have great pleasure, therefore, in inducting you, Captain Macdonald, to the Chair of this Society. I am especially pleased that you are to be our President this year, as I feel it to be particularly fitting that you should occupy this position during the same year that witnesses the occupancy of the Presidential Chair of the Royal College of Veterinary Surgeons by your mentor and friend, Mr. McIntosh.

[Captain Macdonald now came forward and was invested with the presidential medallion by the outgoing President, who inducted him to the Chair amid loud applause.]

The President (Captain J. R. Macdonald), returning thanks for his election, said that those thanks were coupled with the wish that he could feel as confident of his ability to fulfil the duties of President as the proposer and seconder seemed to be about it. (Laughter.) Nevertheless, he would do his best to carry on the work that had been done by his distinguished predecessors. He would remind them, however, that the President's success could only be measured by the support he received from the members of the society, and the matter really rested more with them than with the President; therefore he would ask them to attend the meetings as frequently and regularly as possible.

Before he resumed his seat, it was his pleasant duty to follow the usual custom whereby the incoming President proposed a vote of thanks to the outgoing occupant of the presidential chair. He did so with the utmost sincerity and pleasure. Captain Balls, with ability and tact, had commanded a very happy ship during his year of office, and they would wish to accord him, on his retirement from the chair, a very hearty vote of thanks. (Applause.)

Captain Balls, in acknowledgment, said that he had greatly appreciated the all-too-kind terms in which their newly-elected President had put to them that vote of thanks. He might say that his had been a very enjoyable year of office for him; he had valued the support he had received from the Fellows and particularly that accorded him by the Hon. Secretary and the Hon. Treasurer. The Hon. Secretary had done everything possible to make his tenancy of the chair smooth and enjoyable. He sincerely hoped that the Fellows would respond to the full to Captain Macdonald's appeal for their support while he occupied the presidential chair.

Vice-Presidents. — The retiring President (Captain L. S. Balls), Professor J. G. Wright (re-elected), Major T. Dalling and Mr. J. W. H. Holmes.

Hon. Treasurer.—Dr. J. McCunn (re-elected).

Hon. Secretary.—Mr. H. E. Bywater (re-elected).

Trustees.—Mr. E. Lionel Stroud, Captain S. Villar and Mr. J. Willett (re-elected).

Hon. Auditors.—Professor J. G. Wright (Auditor, member of Council) and Mr. G. Formston (Auditor, non-member of Council).

Council.—Mr. H. D. Jones, Mr. J. W. McIntosh, Professor J. Macqueen, Mr. W. Perryman, Miss K. W. Shedlock, Captain R. J. Stow, Mr. R. A. Willett and Professor G. H. Wooldridge (all re-elected), together with the following newly elected—Captain R. E. C. Bullen, Mr. Cyril King, Mr. Neville King and Miss M. Oyler.

Clinical Discussion

The Council was elected, as above, by ballot from a large number of nominees, and the time of awaiting the completion of the prolonged labours of the scrutineers was profitably occupied in the discussion of matters of clinical interest.

Veterinary-Colonel G. Rees-Mogg inaugurated this interesting diversion by recounting the case of a Troop mare which first came under his notice on June 26th this year. She looked in such a terribly unthrifty condition that he tested her with tuberculin, but the reaction was negative. A urine test revealed the presence of blood and albumin, but there were no casts.

As he had to go away on manœuvres for a while he left the mare under the charge of Major Townsend. Treatment for kidney trouble yielded no result, and the mare wasted terribly and died seven weeks afterwards. On *post-mortem*, one of the kidneys weighed two-and-a-half pounds and the other five pounds (the normal weight of the horse's kidney was from one-and-a-quarter to one-and-a-half pounds) and the bladder weighed one-and-a-half pounds.

He sent the kidneys and bladder away to Dr. Sheather, whose macroscopical examination revealed cystitis and pyelonephritis, while there were lesions of old abscesses in these organs.

During the 30 years that had elapsed since he had qualified that was, as far as he knew, only the second case of nephritis he had had under treatment, and he always made a *post-mortem* of every case that died.

Replying to Mr. Perryman, Colonel Rees-Mogg said that at no stage was there any excess of urine, but it was very thick. No pus cells were found.

Professor J. G. Wright thought that the case was probably one of primary cystitis with an ascending pyelonephritis, so that it was improbable that casts would be found. Was the horse ever subjected to catheterisation? What was the cause of the bladder becoming inflamed, and was any bacteriological examination made of the bladder?

Colonel Rees-Mogg replied that bacteriological examination of the urine was made by Major Oxspring, but he could not detect the presence of any organisms. Catheterisation was not carried out, so far as he knew.

Professor Wright informed the meeting that on two occasions he had had a horse develop cystitis as a result of catheterisation.

Captain Stow recounted a case in which the urine appeared normal while the horse was passing it, but which was followed by the passage of two ounces of blood at the time he saw it.

Professor Wright expressed the opinion that this was, in all probability, a case of papilloma of the bladder.

Treatment of Fistulous Withers with the Ministry's *Brucella abortus* Vaccine

Captain J. C. Coleman said that he would like to ask whether any Fellows present had had any experience of the use of the Ministry of Agriculture's *Brucella abortus* vaccine in the treatment of fistulous withers. He had been aware that the Ministry were carrying out research in this connection, and in two cases, therefore, he had sent samples of blood from the two animals affected up to the Ministry, who had said that the causal organism was Bang's bacillus. They had sent him a vaccine, which he injected, and in one case the abscess pointed and burst in three days, while at the date of the second injection the swelling had entirely disappeared.

In the second case—that of a much older horse, a Shire—the swelling had been in existence for about three months and was ten or eleven inches in thickness and nine inches in diameter.

In the first case he had no swelling at the site of injection, but in this one there was a

swelling, and the discharge was most fœtid and stinking. He wrote to the Ministry and they advised him to open it. He did so, liberating about 40 ounces of flocculated, coagulated serum.

He had only had those two cases in which he had tried the vaccine and he would like to know if anyone else had had a similar experience.

In reply to the President, Captain Coleman said that there was no history of injury in either case, and added that the vaccine was supplied to him free by the Ministry who, he believed, would welcome applications for it.

The President enquired if any other Fellow had any experience of the use of this product. It seemed that its use held out promise of being of great help to the practitioner, if he could cure fistulous withers by such a comparatively simple method as that.

Professor G. H. Wooldridge stated that Dr. McCunn had had experience at the College of a series of eight cases of poll-evil and fistulous withers from one premises and belonging to one owner. In each case the animal reacted positively to the *Brucella abortus* test and also on examination for strongyles. Dr. McCunn had these cases in hand and might be able to give them more definite information as to the actual line of treatment adopted.

It was a well-recognised thing that many of those sinuses were the result of *Brucella abortus* infection, and all doubt as to a particular case was, of course, removed if the horse in question gave a positive reaction to the agglutination test. When one got eight horses so affected on one premises, it was rather significant. For the introduction of the infection it was not at all necessary that there should be any primary injury. The worst abscesses with which he had met had been low down on the neck and these he had treated by deep incision on both sides of the neck, inserting the hand and removing all that was possible of inspissated pus, necrotic tissue (even including portions of the lamellar portion of the ligamentum nuchæ) and then injecting large quantities of antistreptococcus serum. These particular cases showed huge numbers of streptococci in pure culture. They made a perfect recovery; it was a very drastic operation in each case, but it was more than justified.

Professor Wright stated that Mr. J. S. Stewart, late of Cambridge, had gathered data whereby he showed that practitioners in towns recognised that fistulous withers was a very rare disease of heavy horses, and yet country practitioners were very familiar with gross traumatic lesions about the withers and the back. It was a fact, then, that fistulous withers was a disease associated with horses working in country districts. That was put forward by that investigator as evidence in favour of the view that the primary cause, in some cases at any rate, was infestation of the ligamentum nuchæ with the larvæ of *Onchocerca cervicalis*, which had been deposited by the female Culicoides.

The other point that arose out of that discussion was, what bearing had *Brucella abortus* upon fistulous withers infection? Some American workers had isolated *Brucella abortus* itself from the pus in the lesions, but that was only in a small percentage of cases. It should be said that it was only in a small percentage of cases, also, that larvæ from the eggs of *Onchocerca* could be found.

It would therefore be seen that the accepted view, that fistulous withers was compatible with sinus formation consequent upon infection by cocci, did not represent the true facts of the case.

Was there a correlated infection of cattle on the farms from which the horses came? There was some evidence to show that *Brucella abortus* infection in cattle and fistulous withers in horses ran together.

Captain Coleman said that on both farms from which his cases came contagious abortion was present, and Mr. McIntosh gave supporting evidence to Mr. Stewart's findings by saying that throughout the whole of his experience in London, spread over 30 years and in a stud of 3,000 horses, they had never had a case of poll-evil, at least.

Mr. H. D. Jones agreed with Mr. McIntosh that throughout the last 15 years fistulous withers and poll-evil had been practically extinct in London, but at one time, especially where the stables were low and horses used to strike their heads, and where the pads were badly fitting, poll-evil and fistulous withers were common: he was speaking of from 20 to 25 years ago.

Lieut.-Colonel Rees-Mogg mentioned that he knew of a case where a horse had been treated for many months for fistulous withers. A microscopical examination of the pus was made, which revealed the presence of the cryptococcus of Rivolta (epizoötic lymphangitis) and then the fat was in the fire.

Mr. W. Perryman observed that he was much in agreement with what Mr. Jones had said: he was quite certain that a great number of cases of poll-evil and fistulous withers were due to injury. In the days when fistulous withers were common in town horses they also got a great deal of mange and the animals used to get their shoulders under the manger and start rubbing, causing abrasion and similar injury, which was the start of the trouble. This was, of course, particularly the case in stables in which the management was bad—where there was badly-fitting harness and the horses were neglected.

He thought it was just as well not to lay too much stress on the bacterial origin of those conditions.

Captain J. R. Stow said that both Mr. Jones and Mr. Perryman had expressed the opinion that injury was a more important factor in the causation of poll-evil than was bacterial infection. He had had some experience, however, of pit ponies, and while they would frequently sustain injury from striking their heads against low roofs, ceilings, etc., he could not remember a case of poll-evil in pit ponies.

Dr. McCunn, announcing that the scrutineers had now completed their task, said that the discussion raised by Captain Coleman had proved the subject to be of such interest that they would find at least one ready-made item for their programme of papers when they came to discuss that matter later in the proceedings. (Hear, hear.)

Professor Wright seconded the proposal, adding that he hoped that Dr. McCunn would be one of the contributors to that evening and Mr. J. S. Stewart another.

Dr. McCunn said that he supported the latter part of Professor Wright's suggestion most heartily. Might he say that Mr. Stewart had done one of the best, if not the best, pieces of work that had been accomplished in veterinary science for years and years—as regards the small fly which was the transmitter of the Onchocerca. Mr. Stewart had worked out the life history of the parasite transmitted by that fly, by means of experiments on himself. He fed the flies on his own arm. It was work which had never been done before, and it had gained him renown all over the world; so much so, that it was the only piece of veterinary work of that kind that had been honoured by an invitation from the Royal Society requesting its exponent to deliver a paper before the Fellows. For certain reasons, however, Mr. Stewart was unable to accept the invitation.

The meeting proceeded to devote some attention to subjects for papers, and their authors, for the ensuing session, and it was eventually left with the Council to consider the suggestions put forward and others which might be forthcoming from the Fellows.

Annual Dinner.—Upon the recommendation of the Council, it was agreed that this function, which should take the form of a dinner-dance, be held at the Mayfair Hotel on the first Thursday in November, and the President, Hon. Secretary, Hon. Treasurer, Professor Wooldridge and Major Kirk were constituted the Dinner Committee to make further arrangements.

The "Victory" Medal.—The President announced, amid loud applause, that the Council had unanimously decided to award the Society's "Victory" Medal this year to Mr. H. D. Jones. It was not necessary for him to say anything further about that at the moment, as he should have the pleasant duty of handing the medal to Mr. Jones at the Annual Dinner. He was sure, however, that no better recipient of that award than Mr. Jones could possibly have been found. (Applause.)

The meeting terminated with the passing of a hearty vote of thanks to the respective Presidents for their conduct in the chair during the evening.

H. E. Bywater, *Hon. Secretary.*

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WESTERN COUNTIES V.M.A.*

PRESIDENT'S ADDRESS AT LISKEARD

A meeting of the above Division was held at Webb's Hotel, Liskeard, on Wednesday, June 26th, at 2 p.m.

The President, H. Fraser, Esq., M.R.C.V.S., occupied the chair, and the following members signed the attendance book: Messrs. Fraser, R. B. Nelder, Peter Fisher, Esmond Brown, R. R. Willing, C. C. Parsons, W. Richardson, J. Willis Thwaite, H. W. Townson, D. R. F. Hoddinott, R. H. Smythe, C. V. Watkins, L. E. Perkins, C. Masson and S. J. Motton.

Apologies for inability to attend the meeting were received from Sir Frederick Hobday, Major Dunkin, and Messrs. A. R. Smythe, Forbes, Keeling Roberts, C. Stephens, F. T. Harvey, G. Harvey, W. B. Nelder, C. Head and Colonel Head.

Correspondence.—A letter from Captain Hillier, the R.S.P.C.A. Regional Organiser (S. and S.W. England), dealing with the Free Treatment Scheme in certain towns, was read.

New Members.—Mr. R. R. Willing, M.R.C.V.S., and Mr. L. E. Perkins, M.R.C.V.S., were unanimously elected members of the Division.

Presidential Address

The President, Mr. H. Fraser, now delivered the following Address from the Chair:—

I wish to thank you for the honour you have done me in electing me to the Presidency of the Western Counties Veterinary Medical Association and I hope the Society may have a very successful year.

Unfortunately, honours always entail some extra duties and the one I consider most difficult is giving you a presidential address. This being Jubilee Year and also the jubilee year of my joining the veterinary profession, I thought it would not be amiss were I to make a brief retrospect of the past 25 years and take stock roughly of what progress has been made in

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veterinary science, more particularly as applied to the country practitioner.

In most, if not all, veterinary practices, small animal work has rapidly increased during the last decade and in this case a very great advance has been made in the vaccination of dogs against distemper—work which we are all requested to perform. Apart from its being a boon to dogs, I believe this work has also been invaluable to research in the investigation of other diseases due to an invisible virus, which are so difficult to investigate.

Perhaps the greatest progress in small animal practice has been made in the realms of surgery, but I think most of us who are country practitioners will admit that major operations in the smaller animals do not really belong to our province. We have neither time, equipment nor sufficient practice to make such operations a success.

When we come to every-day practice in the larger animals it is not so easy to point to any advance and very often I feel that one tends to revert to old, proved methods in preference to new forms of treatment.

Since the War, chemistry has played a major part in trying to solve causes of disease and investigators claim to have proved that many ailments are due to some mineral deficiency in food. In some instances when this lack has been supplied there have been spectacular recoveries, but fashion has its devotees even in veterinary medicine and the tendency to-day is to exploit and carry the mineral deficiency theory too far and to the neglect of other factors which may play an important part in the production of disease.

As regards calcium deficiency, no doubt its importance as a factor in disease may be borne out in some instances, but the addition of calcium has not proved to be the wonderful cure for all ills, so loudly acclaimed in the last few years.

In dietetics, chemistry has proved a very great boon in the formation of balanced rations. Here again, however, I do not think it ought to be treated as a matter of exactitude but as a guide to the nearest and best proportions of different food materials. So-called balanced manufactured rations do not appeal to me as a diet and one must remember that they are fed to animals each of which has some difference, if only slight, in its power of digesting food. One must freely admit that chemistry has added very greatly to the powers of diagnosis, especially in the examination of body discharges.

Veterinary research into animal diseases has also made great strides in the last 15 years or so. For some reason or other, it dawned on the Higher Powers that money might be well spent by investigating animal diseases. At the same time, some would like to blame the profession for stagnation after allowing it to fight for its living. Why the veterinary profession, any more than any other, should be expected to earn its living and also devote sufficient time and money to research, it is difficult to understand. The question, " Has the progress of research in the major diseases of the larger animals been much help to the practitioner? " is a very difficult one to answer.

Considerable time and money have been and are being spent on the study of foot-and-mouth disease. No doubt it would be most beneficial to get down to the root of the disease, but this, from the nature of the virus, seems to be a very difficult matter. It is a disease which occurs in isolated outbreaks and is, very fortunately, not always with us; for these reasons and also because of its very contagious nature the present method of dealing with it seems to be the most successful. Owing to the various political aspects of the question, I will not attempt any remarks as to how we might prevent the introduction of the disease into this country, but from what we do know about the disease and the present method of dealing with it I think money might be better spent in working out research in some of our more common or garden ailments—which are most probably as expensive to the country in the long run, if not so spectacular, as foot-and-mouth disease.

In what are called the four major diseases of cattle—tuberculosis, contagious abortion, Johne's disease and mastitis—we cannot point to much progress. With regard to tuberculosis, the intradermal tuberculin test has been improved and, I think, is admitted to be more conclusive than the subcutaneous test. Concerning contagious abortion and Johne's disease, two of the greatest scourges in the cattle industry, I do not think we can point to any profitable advance. Considerable work has been done in elucidating the different forms of mastitis in the laboratory—perhaps this is not so easy in the field—and useful measures have been advised in controlling the spread of the disease.

Diseases of the new-born are still with us. Joint-ill in foals seems to have fallen into a back seat, possibly because the horse is not now considered so necessary to national life.

White scour in calves is the cause of great loss all over the country and whilst all forms of treatment, both preventative and curative, are advised, none seem of much avail.

In research into animal diseases I think much gain might accrue to the practitioner were a thorough beginning made with diseases of the young.

Great progress has been made with diseases of sheep by work carried out at different institutions. These conditions, I fear, have to a

great extent fallen out of the hands of the general practitioner. The animals are treated in the mass; they are not of sufficient individual value to be treated alone and once a diagnosis has been made by some institution the necessary treatment is applied by the owner.

More attention has also been paid to diseases of the pig, and I think the practitioner is more often consulted in their treatment. This would appear to have increased since the great movement began in this country to provide our own pork requirements. As in the case of sheep, treatment is mostly of a mass nature and treatment by vaccination, etc., in certain diseases would also tend to fall into the hands of laymen. Laymen appear to have no difficulty in obtaining vaccines from chemical houses, which are gradually extending their operations into every country town and are out to catch all possible veterinary medical supplies, the furnishing of which, at one time, was an easily earned part of the veterinary surgeon's income but which is now, I think, declining.

A great advance has been made in parasitology, and parasitic infestation I have always thought to be the cause of great loss in the animal kingdom. Naturally the life history of the parasite was the first point to be worked out, and whilst this has been done in some instances, in others it has proved much more difficult. Until one knows the life history of a parasite, both curative and preventative treatment are very difficult. The action of some drugs has been studied and the results of this work have proved very useful in the treatment of infection by certain parasites. What would appear to be a great factor in parasitic disease is that of overcrowding, and this has become more prevalent in late years owing to farms being put down to grass and thereby more heavily stocked. The greatest difficulty the practitioner has in dealing with parasitic diseases is to advise treatment of such a nature as to be economical and which will allow the farmer to carry on that method of farming which is, for him, the most paying.

Quite recently what may be termed local authority work has loomed largely in veterinary practice and the tendency amongst the authorities is to cut the practitioner out of it altogether. I do not intend to go into this burning question, but beg leave to state that the practitioner is quite competent to play his part in prophylaxis of disease and ought to have some say in carrying out State veterinary work in the district where he practises and pays rates.

. . . . .

The Attested Herds Scheme.—Following the President's Address, which was very favourably received, a discussion on the Tuberculosis (Attested Herds) Scheme (England and Wales) was opened by Esmond Brown, Esq., M.R.C.V.S., Superintending Inspector, Diseases of Animals Division, Ministry of Agriculture, the following members taking part: Messrs. Fraser, Townson, Watkins, Hoddinott, Richardson, Perkins, R. H. Smythe, Masson and Motton.

Revision of Scale of Fees.—The Hon. Secretary was requested to send a copy of the existing scale to members so that they might consider it prior to the next meeting.

At the conclusion of the meeting thanks were accorded to the President for his Address and to Mr. Brown for opening the discussion on the Attested Herds Scheme.

S. J. Motton, *Hon. Secretary.*

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MID-WEST V.M.A.*

SURGICAL ANÆSTHESIA AND TECHNIQUE DEMONSTRATED AT STROUD

The Summer Meeting of the Mid-West Division of the "National" was held by the kind invitation of the President, at Stroud on Thursday, August 22nd, 1935, when the following members and visitors attended: Messrs. T. J. Margarson, J. R. Barker, J. C. Coleman, J. S. Garside, W. D. Rees, R. Moore, F. W. Hardy, F. J. Eardley, C. Golledge, A. J. Cattell, J. Golledge, E. C. Bovett, A. E. Gachet, A. E. Roberts, J. J. Aveston, H. S. Robinson, S. H. Pettifer, J. R. Baxter, T. J. Reynolds, C. Digby Watkins, C. J. Pugh, C. S. Adams, Professor J. G. Wright and Charles E. Perry, Hon. Secretary. Visitors: Messrs. T. Dalling, M. O. J. McCarthy, V. E. Perry, J. McGhee, A. Houston, A. B. Fewings, Miss M. W. Taylor, Messrs. M. L. Dartnall, H. B. Kauntze and J. T. C. Bradshaw.

Letters of apology for absence were received from Professor Hobday, Messrs. Powell, Hewer, Boyd, Austin, Morgan and Good.

A letter of resignation was received from Mr. Good. The resignation was accepted with regret.

New Members.—The following were elected to membership: Messrs. Fewings (Cheltenham), Adams (Dursley) and Brown (Board of Agriculture).

Ladies' Tour.—A charabanc tour was arranged by the President and the following ladies enjoyed a very pleasant afternoon in the Stroud valley and over the Cotswold Hills: Mrs. Robertson, Mrs. Cattell, Mrs. Coleman, Mrs. and Miss Baxter, Mrs. Perry, Mrs. Bovett and friend, Mrs. Herbert, Mrs. Williams, Mrs. Fuge, Mrs. Garside, Miss Palmer and Mrs. Margarson.

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Surgical Anæsthesia and Technique in Small Animals

Demonstration by Professor Wright

The main business of the meeting comprised a demonstration of surgical anæsthesia and technique in small animals, by Professor J. G. Wright, of the Royal Veterinary College. Four subjects were presented.

1. One-year-old Pekingese male, with a large, left side, scrotal enterocele.
2. An aged wire terrier male for tooth extraction.
3. A young adult female terrier for ovarohysterectomy.
4. Five-months female kitten for ovarohysterectomy.

In the three dogs intravenous nembutal anæsthesia was adopted. Stress was laid, by the operator, on the method of restraint, the rate at which the injection was made, and the method of assessing the degree of anæsthesia present. In all cases induction was perfectly quiet and the anæsthesia ideal. In the operation for scrotal hernia attention was drawn to the site of incision, and its length. Despite the hernia being the size of a large orange, an incision 1 inch long was ample. Once the tunica vaginalis reflexa was exposed it was a simple matter rapidly to separate the whole of the hernial sac by blunt dissection. The hernial sac was obliterated by ligating it close to the external inguinal ring (No. O catgut), the testicle on that side being sacrificed.

The operation of speying the bitch was performed through the mid-line. It was pointed out that in all but very young puppies, it was impossible to remove both ovaries through a single flank operation, owing to the shortness of the ovarian ligaments in the bitch. Discussing the method of procedure, the operator said that the genital organs might be located in one of two ways—by touch or by sight. If the first was employed—and that was the one he proposed to demonstrate—the length of the incision need only be sufficient to allow the insertion of the index finger into the abdominal cavity. The near uterine cornu was recognised by touch under the finger, and withdrawn. The necessity for ensuring that the ovary was completely removed, was stressed. The object of the operation was the prevention of œstrum, and if the whole or part of an ovary was left, results would be most unsatisfactory. Not infrequently nymphomania resulted. To ensure complete removal it was necessary to have an assistant, whose duty it was to apply traction to the cornu and so bring the ovary into view, with the fingers of his left hand, at the same time pressing the abdominal wall downwards with the fingers of his right, whilst the operator applied a ligature to the ovarian artery well beneath the ovary. Having released the one ovary from its abdominal attachment, and providing the incision was appropriately placed, no difficulty would be experienced in drawing the opposite cornu into view.

When operating upon very young bitches the small size of the uterine horn might make its recognition under the finger very difficult. In such cases it might be found easier to locate the uterus "by sight." This would necessitate a longer incision—2 to 2½ inch long, the posterior commissure being ¾ to 1 inch in front of the pelvic brim, according to the size of the puppy. "At this point," said the demonstrator, "the uterine body lies immediately above the bladder. Introduce the handle of the scalpel into the wound and push omentum and small intestine forwards, out of the way. Next deflect the bladder to one side and the uterine body will be seen beneath it. Should this be found difficult, gently draw the bladder out of the wound and this will bring the uterus into view. The secret of success in abdominal surgery is the speed and precision with which the operator works, and knowing just where to find the organ one seeks." For closing the abdominal wound No. 1 catgut was used.

For the operation on the cat ether-oxygen anæsthesia was employed, using a sealed mask of the operator's design. He asked the company to observe the degree of struggling which occurred during induction, and the rate at which anæsthesia was induced. The operation was performed through the left flank, adopting a ⅜-inch incision. The ovarian ligaments in the cat being long, both ovaries could be removed through the single incision.

The operator demonstrated the ease with which the ovaries could be located through such a small incision, provided that each structure was recognised and appropriately dealt with.

Throughout, the drums of sterile cloths and dressings, specially prepared by Messrs. Arnold and Sons for small animal surgery, were used.

Professor Wright expressed his appreciation to Mr. Margarson, both for the excellence of the arrangements for the demonstration, and the careful manner in which he had prepared the subjects.

[Mr. Margarson advises us that all the subjects made a good recovery.—*Editor.*]

After the meeting the members joined the ladies at the Bear Hotel, Rodboro' Common, for tea at the invitation of the President. A vote of thanks was proposed by the President to Professor Wright for coming down and giving the surgical demonstrations.

The vote of thanks was seconded by the Hon. Secretary, who said it was a pleasure to ask

Professor Wright to come down as he always consented at once. This was the third time Professor Wright had given demonstrations to the Association and he thought it was now time for them to do something for him (Professor Wright). He had very great pleasure, therefore, in proposing that he should be elected an honorary member of the Association. This proposition was seconded by Mr. Aveston and carried with acclamation.

In reply, Professor Wright expressed his great gratitude to the Society for the honour which they did him in making him an honorary associate of the Society. His appreciation was made greater by the fact that he was a native of the Mid-West Division, having been born in Newport, Mon., and having served as a pupil with Mr. George Garden, in the practice originally built up by Mr. Edwin Sayer, and now in the hands of Mr. Harold Robinson. He was more than repaid by the very kind way in which they had received his small effort. Small animal work played a part in every practice to-day, in some a very large one; and it was surprising what a large proportion of it was strictly surgical. It was for this reason that he commended to them the use of modern methods of anæsthesia and technique. He felt sure they would give gratifying results.

A vote of thanks was proposed to the President for inviting the members to Stroud, Mr. Margarson not only arranging the meeting, but entertaining the members to tea and the ladies with a charabanc tour. The President suitably responded. A vote of thanks to Mrs. Margarson, was proposed by Mrs. Baxter on behalf of the ladies, for her kindness to them. Mr. Margarson having responded on behalf of his wife, a very enjoyable and instructive gathering terminated.

C. E. Perry, *Hon. Secretary.*

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NORTH OF SCOTLAND V.M.A.*

HALF-YEARLY MEETING AT ABERDEEN

The half-yearly meeting of the Division was held in Marischal College, Aberdeen, on Saturday, September 21st, 1935.

Mr. John Grant, President, was in the chair, and there were also present: Messrs. Wm. McPherson, Wm. Anderson, Alex. Niven, H. McVean, Alex. Sievwright, J. Gordon Souter, Wm. Grant, Robson, junr., W. J. Rice, Wm. M. McKay, W. A. R. Ogilvie, D. Clerk and George Howie (Hon. Secretary).

The members were pleased to welcome as visitors Dr. Ledingham, Medical Officer of Health, Banffshire, Mr. J. N. Ritchie, Department of Agriculture for Scotland; Mr. H. H. Holman, Rowett Research Institute; and Mr. W. Beattie, Aberdeen.

Apologies for absence were received from Messrs. J. Beattie, J. Anderson, D. Cumming and W. Hepburn.

The minutes of the last general meeting were taken as read as they appeared in *The Veterinary Record*, and were approved and signed.

The minutes of a special meeting held on May 25th, 1935, was then read to the members, as many of them were not present at that meeting. This meeting had been convened for the purpose of discussing a letter received from the General Secretary, N.V.M.A., regarding the question of fees for the clinical examination of cows for Grade "A" licence under the Accredited Herds Scheme, with a view to the formulation of a national scale for the guidance of members. A circular letter from the Scottish Branch was also discussed at the same meeting. In it the Secretary asked for the support of the members of the Division in the formation of a Branch Representation Fund, and it was proposed by Mr. Niven and seconded by Mr. Rice that a fee of 10s. per member be asked for for the fund. The question of the payment of the above-mentioned fee was discussed and it was agreed by all the members that the subscriptions be collected by the Secretary at the first meeting of the year.

Correspondence.—The Secretary read the following letters:—

(*a*) From Dr. Fred Bullock, Secretary of the Royal College of Veterinary Surgeons, enclosing an appeal for the Endowment Fund for the library of the College and expressing the hope that each Division might be willing to vote an annual donation to the Library Endowment Fund.

It was agreed by the members that a library from which members could draw books on request would be very useful and it was proposed by Mr. Niven and seconded by Mr. Grant that the sum of £2 2s. be subscribed annually from the funds of the Division.

(*b*) From the General Secretary of the National Veterinary Medical Association bringing to the notice of members the correspondence that has passed between the Agricultural Research Council and the National Veterinary Medical Association in connection with investigations into braxy-like diseases of sheep.

This correspondence had already been brought to the notice of the members of this Division and they signified their readiness to collaborate with the research workers and promised to notify any diseases which might come under the heading of "Braxy-like" diseases.

(*c*) From the General Secretary of the

* Received for publication October 9th, 1935.

National Veterinary Medical Association urging the Secretaries of Divisions to use their influence in persuading members of their Division who are not already members of the "National" to join the parent association.

Two other letters from the General Secretary with reference to the appointment of representatives to the Council of the National Veterinary Medical Association and the rules governing the award of the Dalrymple-Champneys Prize were also brought to the notice of the members.

Resignation.—A letter was read from Mr. George McDonald, Huntly, giving intimation that he was resigning membership of the North of Scotland Division as he was leaving for New Zealand. The Chairman expressed the hope that Mr. McDonald would be very successful in his new post and regretted that the Branch was losing one of its younger members.

Election of New Members.— The Secretary proposed and Mr. Sievwright seconded that Mr. F. J. Hyland, Banchory, be elected a member of the Division, and Mr. J. Grant proposed and Mr. Niven seconded the election of Mr. H. H. Holman, Rowett Research Institute.

The election of both gentlemen was most heartily agreed to by the members present.

Attested Herds Scheme.—The President then introduced Mr. J. N. Ritchie, Chief Veterinary Officer for the Department of Agriculture for Scotland. He said that Mr. Ritchie needed no introduction to members of the north and that he had kindly consented to attend the meeting to explain to the members the salient points of the new Tuberculosis (Attested Herds) Scheme (Scotland). Mr. Ritchie then gave a very full explanation of the whole scheme and wound up his remarks by discussing some difficulties in the application and interpretation of the tuberculin test. A good discussion by members followed and at the close of the meeting a hearty vote of thanks to Mr. Ritchie was proposed by the Secretary and seconded by Mr. Rice.

Geo. Howie, *Hon. Secretary.*

We have received a copy of a booklet issued by the British Drug Houses, Ltd., drawing attention to their "Lovibond Limitester," for use in the application of the phosphatase test for the detection of raw or insufficiently-heated milk in pasteurised milk. The test depends on the detection of the enzyme, phosphatase, which is always present in raw milk but is destroyed at the temperature necessary for efficient pasteurisation. While of particular value in this connection, the Lovibond Limitester is a simple form of comparator for use in any limit test in which a certain specific depth of colour must not be exceeded. A copy of the booklet will be sent to any reader of this journal on application to British Drug Houses, Ltd., Graham Street, City Road, N.1.

From *The Veterinarian*

November, 1835

[We publish the following extracts from a letter to the Editors of *The Veterinarian*, as representing, in a typical degree, the vituperative licence allowed to contributors to the correspondence columns of scientific periodicals of that outspoken time.—*Editor, V.R.*]

From the Author of the "Concise Account of Veterinary Surgery"

"After all the abuse this ignorant clodpole has been able to lavish upon me, he can point out only these three errors [in the author's account of the Edinburgh School]—that regarding the attendance of old pupils, that regarding the attendance of London-taught veterinarians, and that regarding the weekly number of Mr. Dick's lectures. All the remainder of his paper, which extends to nearly eight octavo pages, is composed of irrational reasoning, beggarly abuse, mountebank egotism, and the outrageous indecencies of one accustomed to the lowest of society: all is as feeble and vile as the source from which it proceeds. They that would know the extent of his reasoning powers, may consult the first two sentences of his twentieth paragraph, the whole of the twelfth and the twenty-fourth, or, indeed, almost any other. His insignificance, his infelicity of expression, the meanness of his language, the poverty of his mind, the rankness of his egotism, his pitiful and obscure insinuations, his flatulent exultation and currish allusions, pervade every page, and faithfully describe the nature of the man. The satirical efforts of this infamous reviler are sufficiently wretched; and his apology for blacksmith quacks quite characteristic. I well know the class to which he belongs; and I heartily despise the whole race of such fanglers, reptiles. I also know the ultimate gain Mr. Wilson expects from his paper; and, looking at the reason I have, I cannot but consider that he who uses such means, for such ends, must be a low grovelling wretch; one who for a very small gain can sacrifice honour, honesty and truth. A most sorry pick-thank!

"If the pure love of truth excite your indignation, Mr. Wilson—which is not at all unlikely—never disgrace her sacred form by the exercise of baseness for her vindication. And if mental constitution, or mere necessity, renders villainy, slander, or sycophancy unavoidable, I beseech you, by your own sordid selfishness, to exhibit your odious motives in less revolting nakedness. Look at that which you have written in last month's *Veterinarian*, and compare it with that written by Mr. Youatt, in the March number; and then, at least, pretend that you blush for shame. Get Professor Dick, or some other respectable authority, to apologise to the Editors for your folly, your infamy, and your insane audacity. Write nothing to me: for many years to come I can easily guess all you would like to say, whether good or bad; but I profess not to cure such cattle as you.

"You have been a most injudicious friend to Professor Dick. It is your duty, though not perhaps in your power, to relieve him from the awkward predicament in which you have placed him. He has bitterer enemies than I am, who will not scruple to say that it is a pity that he

waited twelve months for a champion, and found no better than a fool. . . .

"To conclude, if any respectable person will be good enough to inform me, publicly or privately, of the errors I have committed in the 'Concise Account,' I shall do what I can to rectify them; but, except upon compulsion, I shall not soil a page in that pamphlet by such a name as Wilson's. Let him, if he pleases, think me merciful if I should again address him. 'There will little learning die that day he is hanged.'—Farewell, 'thou disease of a friend.'"

JOHN STEWART.

Glasgow, October 8th, 1835.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Nov. 9th.—Meeting of the Executive Committee of the Scottish Branch, N.V.M.A., at Edinburgh.

Nov. 11th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

Nov. 15th.—Meeting of N.V.M.A. Advisory Committee on Poultry Diseases at 2, Verulam Buildings, Gray's Inn, W.C.1, 2 p.m.

Nov. 19th.—Annual General Meeting of the Dumfries and Galloway Division, N.V.M.A., at Dumfries, 12 noon.

Sept. 14th-18th, 1936.—N.V.M.A. Annual Congress, Scarborough.

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R.C.V.S. OBITUARY

LANSLEY, GEO. D., J.P., Lyme House, Axminster, Devon. Graduated London, June 27th, 1888; died November 5th, 1935.

McGOWN, Adam, Bingera Street, Bundaberg, Queensland, Australia. Graduated Edinburgh, May 21st, 1898, died August 23rd, 1935.

PETTIGREW, William, Draffan, Kirkmuirhill, Lanarks. Graduated Glasgow, April 28th, 1881. Died September 5th, 1935.

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THE LATE MR. LANSLEY

Mr. Lansley, whose death we record above, with much regret, was not only a widely-known and highly respected West Country practitioner, but a recognised authority in the Horse Show world. He had been Hon. Veterinary Surgeon of the Richmond Royal Horse Show ever since it was founded in 1892. Mr. Lansley was for many years in charge of the collecting ring at the Richmond Show and was one of the best known Horse Show officials in the country. He always went up from Axminster to the Show in June and was the proud possesser of one of the few original Show badges.

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CONSOLIDATION OF PUBLIC HEALTH ACTS

The October issue of *Public Health* draws attention to a statement that was made (following a suggestion put forward by Sir Harry Pritchard in the course of an address to the Law Society), to the effect that a new Public Health Bill would come before Parliament before Christmas. Substance is thereby given to the belief that there was some foundation in fact for the hints which have been forthcoming from time to time over a number of years from more or less authoritative and well-informed sources, that progress was being made in the direction of the consolidation of public health legislation. "That consolidation was necessary, and should be undertaken, the Society of Medical Officers of Health long ago insisted, and at one time, indeed, the setting up of a committee to consider as to the lines to be followed was contemplated. Of what exactly has been done now or will be done no very precise information is as yet available. According to Sir Harry Pritchard, the committee over which Lord Addington has presided 'are expected to produce a Bill which will not only consolidate the existing enactments, but will make numerous alterations in them, some of them possibly of considerable importance.'"

Commenting on Sir Harry Pritchard's statement, *Public Health* proceeds: "Sounding as this may be, it does not really reveal very much, any more than does the statement the Minister of Health is credited with having made that the measure in course of preparation would consolidate and make such amendments as were considered necessary to Acts on public health, some of which had been on the statute book for more than a century. Whether or not, as this statement suggests, it is purely measures relating to public health and so entitled that are being dealt with is not quite clear. If it is, however, and it is not unlikely that it may be, that will probably be enough to go on with. In any case the experience gained will be of value when the time comes, as it should soon, for taking up the question of consolidation and amendment of other legislation with which health authorities and officers have concern, that relating to vaccination, for example, and the infectious diseases, if this has not been dealt with, as very conveniently it might, along with the ordinary public health legislation. The laws relating to food, not excepting that relating to adulteration, though only recently submitted to a degree of consolidation, call also for such treatment as would result in the production of a single measure containing provision for the safeguarding of the food supply of the people."

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FACULTY OF VETERINARY SCIENCE, UNIVERSITY OF SYDNEY

HISTORY OF THE SCHOOL AND GROWTH OF THE VETERINARY PROFESSION IN AUSTRALIA

[Following upon the publication, in our issue of October 19th, of a note on the Silver Jubilee celebrations of the above school, we have received the contribution reproduced below and which we are glad to publish as a fuller and first-hand account of the history of this famous Australian Veterinary institution, in its association with the expansion of the profession in that continent. The author is Mr. D. Forsyth Stewart, B.V.SC. (Sydney), DIP. BACT. (Lond.), the son of Professor Stewart (Dean of the Faculty) and who is now working at the Research Institute in Animal Pathology, Camden Town.]

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During this year the Faculty of Veterinary Science of the University of Sydney, Australia,

conducted its Silver Jubilee celebrations and it may be of interest to give a brief outline of the history of the school and the growth of the profession in Australia.

Professor J. Douglas Stewart was appointed to the newly-established Chair of Veterinary Science in 1909 and has occupied that position until the present day, guiding the school through its early infancy to its present flourishing manhood, when the value of the services of the veterinarian has assured its successful continuance. At the present time the staff of the school consists of the following officers: The Dean, Professor J. Douglas Stewart; Dr. R. M. C. Gunn, lecturer in Surgery and Anatomy; Dr. H. R. Carne, lecturer in Pathology, Bacteriology and Protozoology; Dr. I. Clunies Ross, lecturer in Parasitology; Mr. F. W. Whitehouse, lecturer in Zootechny; Mr. R. V. Webb, assistant lecturer in Anatomy; Colonel Max Henry, lecturer in Veterinary Jurisprudence; Mr. J. Drabble, lecturer in Meat Inspection; Mr. J. L. Whittet, lecturer in Pastoral Botany; Mr. N. G. Creswick Jackson, lecturer in Materia Medica, and Dr. H. E. McQuiggan, lecturer in Pharmacology. The teaching of other subjects, such as the elementary sciences, Physiology, Biochemistry, etc., is undertaken by other departments within the University.

Following the opening of the Faculty in 1910, sixteen students commenced the course, and with the exception of the war period and the few years subsequently the number of students has steadily increased until now over one hundred are enrolled for the full degree course. One is justified in ascribing this expansion not only to the careful nurturing of the school by the staff but to the growing appreciation and consequent demand for the services of the veterinarian by the pastoralists and stockowners of Australia.

In 1930 the Veterinary School of the Melbourne University closed and since that date the Sydney School has been the only one existent in the Commonwealth. In 1931 the McMaster Animal Health Laboratory was erected in the grounds of the Veterinary School and has always maintained the closest liaison with it, thus offering greater facilities for training and research work.

Owing to the increasingly extensive and intensive training required by students the decision has been reached to extend the course from four to five years and this will be given effect in 1937.

Since the inception of the school 88 degrees have been conferred upon graduates and the national importance of their work is emphasised by the fact that of these 70 per cent. are engaged in research, teaching or in Government administration and disease control work.

The main official function connected with the celebrations was a reception in the Great Hall of the Sydney University on August 26th, given jointly to the Faculties of Veterinary Science and Agriculture, which happily and fittingly were established in the same year.

The Chancellor of the University, Sir Mungo MacCallum, presided over the function, which was attended by the Ministers of Agriculture and of Education. During the course of the evening a presentation was made to Professor Stewart and his address of reply is abstracted here.

After paying tribute to the sister faculty, that of Agriculture, Professor Stewart thanked the Chancellor of the University for his conveyance of good wishes and congratulations and for the

Professor J. Douglas Stewart

help which the University had given to the establishment of veterinary science in Australia. Attention was drawn to the indebtedness of the Faculty to the late Sir Norman McLaurin, who was Chancellor of the University at the time of the founding of the school. Acknowledgment was made, also, of the help given at that time by the late Sir Anderson Stewart, then Dean of the Faculty of Medicine. Appreciation was expressed of the willing assistance given by the administrative and executive officers of the University and by the professors and lecturers of other departments who have helped in developing and providing for the teaching of the curriculum in veterinary science. The assistance granted by the Government had been always sympathetic and it was felt that the Government fully appreciated the importance of encouraging the profession. Special mention was made of the benefactors of the school and grateful thanks tendered for their assistance and support. Great pleasure was expressed at the receipt of so many messages of goodwill and felicitations from eminent people and important public bodies abroad.

The history of the profession was then outlined by Professor Stewart and the gradual transformation from misunderstanding to appreciation traced. Emphasis was laid upon the dependence of Australia on livestock industries, from which is derived directly an income of somewhat more than one hundred million pounds per annum. The realisation of the benefits of veterinary science has led to the expansion of the Commonwealth and State services and to the establishment of many veterinary laboratories for diagnostic and research purposes. Beyond this the demand for country practitioners was increasing

consistently and new avenues of employment were being revealed continually. This has been due primarily to the fact that the graduates of the school proved their worth to such a degree that even now the demand exceeded the supply. However, all that had been envisaged 25 years ago had not yet been completed and attention was drawn to the present pressing needs of the school.

Professor Stewart continued by paying tribute to the loyalty and co-operation of his staff and expressed pleasure at the sustained interest of all graduates in the welfare of the school. Some graduates had brought great credit upon the school by their studies overseas, while research of outstanding merit had been accomplished by several. The graduates of the veterinary school of the Melbourne University had also made many contributions to the advancement of science and their unreserved support of the Sydney school since the closing of their own was appreciated greatly.

Professor Stewart closed his address by thanking and expressing his gratitude to the faculty, on behalf of Mrs. Stewart and himself, for the presentation made to him.

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HISTORY OF THE SCHOOL OF VETERINARY MEDICINE OF THE UNIVERSITY OF PENNSYLVANIA, 1884-1934

From a review of a book on the above subject compiled by the Faculty and appearing in the July, 1935, issue of the *Journal of the American Veterinary Medical Association*, we learn that "Dr. Benjamin Rush, of the medical faculty, in 1807 urged the founding of a veterinary department in the University, and other prominent figures in the medical, industrial and agricultural circles approved; yet three-quarters of a century elapsed before such a department was established. However, as set down by a former dean, Dr. Louis A. Klein, it was a stretch of time during which the issue was kept alive by far-seeing men and various organisations devoted to the development of animal production. Obviously, these early gropings in the uncharted field of veterinary education animated the atmosphere in which the first charter for a veterinary college was granted in the United States (January, 1852), the Veterinary College of Philadelphia, an institution which died because it had neither funds, buildings nor students. This was the first flickering of veterinary education in America. Its reincarnation occurred seven years later (1859) but only to live out a precarious existence which terminated in 1866, when a new group of quarrelling practitioners were granted a charter for the Pennsylvania College of Veterinary Medicine, which lasted but four years. Unfortunately, the new effort developed into a 'diploma mill' lasting into the eighth decennium of the century.

"There being no 'law relating to the practice of veterinary surgery,' the demand for diplomas was scarce, and, as few could be inspired to spend time and money to attend a veterinary college, the 'college' degenerated into a kind of self-made board that held examinations and issued certificates of membership as late as 1884. Under this unsupportable state of affairs, the medical faculty recommended, in 1878, that veterinary professorships be established in the University, but, inasmuch as the institution was deeply in debt and the prospects of obtaining appropriations from the state legislature were meagre, endowments were obtained several years later from private sources, notably from Joshua B. Lippincott, prominent publisher of Philadelphia and trustee of the University, who made possible the founding of the school. With the exception of a small fund set aside for veterinary education in Iowa, in 1879, the Lippincott endowment was the first helping hand given to veterinary education in the United States."

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PROFESSOR HANS SPEMANN

In commenting, in its issue of November 2nd, upon the award to Professor Hans Spemann, professor of zoology in the University of Freiburg-im-Breisgau, of the Nobel Prize for Medicine for 1935, *Nature* states that this presentation is a fitting recognition of a series of investigations which have transferred a large group of phenomena from the domain of metaphysics to that of science, in a way which we are more used to associate with the eighteenth century than with our own. "Since his earliest papers, written at the turn of the century, Spemann has devoted himself to the problem of why one part of an egg develops into a certain organ in the adult, another part into something else. When he began his investigations, there was no scientific answer to such questions; one had the choice of invoking, with Driesch, a non-material entelechy, or of putting one's trust, with Roux, in the physics and chemistry of the future. Spemann refused such theoretical flights. He restricted his speculation to the actual data he could obtain from experiment, and his experimentation again to an intensive study of the development of one group of animals, the Amphibia. After twenty years of research, remarkable alike for the clarity with which the problems were envisaged and the beauty and skill of the technical means by which they were attacked, he was able to demonstrate that, in the amphibian egg, the way in which any part develops is dependent on its position relative to a certain region which he named the organisation centre. The formulation of this concept provided the first step in the causal analysis of the differentiation of the several regions of the egg. But Spemann was not content to leave the organisation centre as an unanalysed biological entity. He proceeded to show that some, at least, of its effects are due to its chemical properties, the nature of which he is still actively investigating, in company with his pupils and many others who have followed him in the exploration of the rich country which he has opened up for science."

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THE HISTORICAL SPIRIT IN THE STUDY OF MEDICINE AND THE INTEGRATION OF MEDICINE AS A PRACTICAL AIM

The Work of Fielding Garrison

In the course of an inaugural address delivered recently at the University of Durham College of Medicine, Sir George Newman, late Chief Medical Officer to the Ministry of Health, said that the medical profession was engaged again in its periodic task of revising its course of academic study. He then went on to say, observes the *British Medical Journal*, that to learn the science and art of medicine it is admitted that a scientific outlook is necessary—the critical but balanced judgment, the historical spirit which looks before and after, the inquiring mind which explores.

"There is one other demand of a rather deeper character which should in my judgment be met," proceeded Sir George Newman, "This demand would have been described by Cicero as *integritas*. We have a modern term for this deeper affinity: it is the 'integration of medicine.' This implies the interrelation of its several parts in one whole (as the several members of the body itself are conjoined) following Aristotle's 'double track of the many into the one, and the one into many'; it implies also the total unity and mutual interdependence of scientific truth.

"The life and work of Dr. Fielding Hudson Garrison, colonel in the United States Army, historian and integrator of medicine, here deserves to be commemorated.

"Fielding Garrison, one of the greatest historians of medicine, was born at Washington in 1870 and died in the Johns Hopkins Hospital at Baltimore in April last. Though this remarkable man became one of the supreme historians of medicine, the Sudhoff of English medicine, his name was not widely known in this country, for he lived, like our own historian Charles Creighton, the reclusive life of a scholar, modest and unassuming. After taking his medical degree in 1893 he joined the staff of the library of the Surgeon-General at Washington, working in its seclusion for nearly a quarter of a century. After the War he became consulting librarian to the New York Academy of Medicine, and subsequently to the Welch Medical School library at Baltimore. His official work was the *Index Medicus* and the *Index Catalogue* of the Surgeon-General's library, but his legacy to us was his masterly and monumental *Introduction to the History of Medicine* (1913-29) and his miscellaneous historical papers in the *Bulletin* of the Academy of Medicine. For here is a grand inquest of the philosophy and science of medicine; here are facts arranged in an order which shall deliver their meaning—one of the most impressive and inspiring treasuries of medical history which have ever been written in the English tongue.

"But Garrison did much more than this. He edited for publication the manuscript of Sir William Osler's Yale Lectures on the *Evolution of Modern Medicine*, which Osler described as 'an aeroplane flight'; but the book has become a land of promise for every aspiring student, produced by the 'best-balanced, best-equipped, most sagacious and most lovable of all modern physicians.' Garrison also edited the English translation of Sudhoff's *Essays on the History of Medicine*, and gave us a graphic and authoritative account of Sudhoff's stupendous labours and his historical methods. Garrison was also an international correspondent, and the friend and helper of every kind of investigator and every lover of true learning. With immense diligence and persistence through all his years, he dedicated himself and his profound learning to his duty and to his friends, with a liberality, a versatility, and an habitual good humour rarely to be found in one man. It is appropriate that we should gratefully commemorate to-day the splendid work and noble life of Fielding Garrison, historian and integrator of medicine.

"The integration and unity of medicine cannot be apprehended without a vigilant appreciation of the potential and kinetic value of its history. Let me urge you to its careful study, now and when you enter medical practice. Goethe used to say that he who cannot render an account to himself of at least 3,000 years of time will always grope in the darkness of inexperience and merely live from day to day; and old Thomas Fuller the seventeenth century historian and author of *The Worthies of England*, one of the favourite books of Sir William Osler, said that history 'maketh a young man privileged with the accumulated experience of the ages and able to make conjecture of things to come.' Speaking of the student of science Goethe added that 'the history of science is the science itself.' This is particularly true of medicine. You begin by taking the history of the patient and you end by recording the history of the case and results of your treatment (if any), and it was out of such records that Hippocrates became famous as the Father of Medicine.

"So for you medical history is more than culture, it is, as Garrison says, *your business*. It increases your understanding of the relation of your patient to that varied and complex social environment which surrounds him and has a bearing upon his sickness; it connects your daily work with all other arts and sciences; it proves what in life is possible, what is fugitive, and what endures; it shows the relation of medical practice to the State and community; it is a clear, cold record of cause and effect, for good or evil; it is a lesson in the development of ethics, and provides an inexhaustible fund both of entertainment and of idealism; it is, as the House of Lords discovered the other day, the only fundamental and inescapable answer of the medical man to the diverse and alluring claims of the magician, the quack, and the charlatan; and, lastly, it is the exclusive method of demonstrating the unity of medicine and the mutual interdependence of its constituent branches. Your appreciation of history as a student and afterwards as a practitioner will be of inestimable pleasure and advantage to you, in work, in leisure, and in travel.

"In illustration of the principles that should guide us in forming an opinion upon any revision of the nature and character of that sort of integrated medical study which Sudhoff and Garrison have spent their lives to establish, I submit for your consideration three points suggested by a bird's-eye view of the history of medicine from 600 B.C. to our own time (2,500 years in all). We see three great periods: first, its rise among the Greeks (Hellenic, Alexandrian, Roman) covering 800 years (600 B.C. to A.D. 200); secondly, a long period of deadening suspension during the Byzantine and Arabic domination, 1,300 years (from A.D. 200 to A.D. 1500); and thirdly, its renaissance from the sixteenth century to the present time.

After passing under review the principles of Greek medicine and the warnings of what he described as the subsequent dark age of medicine, Sir George Newman proceeded to deal with the scientific basis of modern medicine.

"We are all familiar," he said, "with the fact of the awakening or new birth of medicine which we call the Renaissance. It began in the middle of the fifteenth century and, like the Industrial Revolution, it continues to-day. We have been privileged to live in a Golden Age of medicine, and it is as difficult as it is historically fallacious to restrict the Renaissance to its advent. Fielding Garrison was fond of saying that the decennium from 1846 to 1855 was 'the most brilliant in output and far-reaching in consequence in the

whole history of medicine.' Surfeited as we are with recent arrivals such X-rays, salvarsan, insulin, endocrinology, radium, the cinema, the aeroplane, and the wireless, we are apt to forget that the middle nineteenth century had also its *tempus mirabile*.

"Consider Garrison's 'brilliant period' of the giants of experimental medicine. Claude Bernard, the greatest physiologist of modern France and the founder of experimental medicine, made his famous researches into the digestive contribution of the pancreatic juice, into the glycogenic function of the liver as of the nature of an 'internal secretion,' into the vaso-dilator and vaso-constrictor nerves as they affect the circulation of the blood, and into man's dual environment, the external variable environment and the internal environment of the body the constancy of which is maintained by its circulating fluids. 'Put off your imagination as you take off your overcoat when you enter the laboratory,' said he, 'but put it on again as you do your overcoat when you leave the laboratory.' Thus he worked, knowing the profound truth of the enlightenment of experience by the imagination. Bernard's younger contemporary, Helmholtz, published his work on the conservation of energy, located a source of animal heat in the muscles, measured the velocity of nerve current, and invented the ophthalmoscope. Though he stood near the summit of human thought he never forgot he was a physician. As a popular expositor of science he is only approached by Huxley, Tyndall and Sir Arthur Keith. In 1846 Morton administered ether anæsthesia for a surgical operation at the Massachusetts General Hospital, and in the following year Sir James Young Simpson produced chloroform anæsthesia in himself at his house in Queen Street, Edinburgh. Then there was Semmelweis, the Hungarian, assistant obstetrician in Vienna, who recognised puerperal fever as a septicæmia, conquered it by antiseptic methods in his own wards, and thus reduced excessive maternal mortality.

"Another of the immortals of this decennium was Carl Ludwig, professor of anatomy and physiology for nearly half a century at Marburg, Zurich, Vienna and Leipzig, and of whom Sir Lauder Brunton used to say he was 'like the great architects of the Middle Ages who built the wonderful cathedrals which we all admire and whose builder's name no man knows.' He invented instruments of measurement of vital processes, and explored urinary excretion, lymph formation, innervation of the salivary glands, and the hydraulics of the circulation. He was second only to Boerhaave of Leyden as a teacher of international pupils, and was almost as versatile and enchanting as Goethe. But I must not weary you with details of the great names in medicine from 1845 to 1855. There was James Marion Sims on women's diseases, Addison on pernicious anæmia and the suprarenals, Waller on degeneration of the spinal nerves, von Kölliker on histology, Cohn on the nature of bacteria, Garcia on the laryngoscope, and there was the glittering fame of Florence Nightingale. Nor is this all, for Louis Pasteur was then at work at Lille on the cause of fermentation, and Charles Darwin in Kent was writing *The Origin of Species*. Here in the short span of ten years were laid the scientific foundations of modern medicine. They were also much more than foundations. They have proved to be the *raison d'être* of our science, they establish the validity of medical and surgical practice, and they are the ultimate defence against all magic and medical imposture.

"We possess the positive principles of Hippocratic clinical medicine; to this we add the solemn and significant warnings of the Dark Ages—the thraldom of authority, the negation of the unity of medicine, the divorce between medicine and surgery, the absence of the independence and freedom of thought, and the neglect of inductive and experimental medicine; and thirdly, we have the marvellous return of the Greek spirit in the Renaissance and its outburst in a brilliant decennium of the nineteenth century, in which brief period there were born the far-reaching and dynamic truths of internal secretion, of control by the nervous system, of anæsthesia, of antisepsis, of the physics of the circulation, of endocrinology, of bacteriology, and of medical sociology. What a galaxy for our encouragement and guidance! *And what are we doing with it all*? Remember the term *'we'* stands for the *competent medical practitioner, still the backbone of the profession, preventive and curative.*

"First, we must integrate the substance of this knowledge and experience of the 'wisdom of the body'; we must be vigilant to make it a vital part in our study and our practice of the unity of medicine. This splendid tapestry of scientific truth, well woven in warp and woof, is our inheritance, and the opportunity of every happy medical warrior, as Wordsworth said, to 'turn his necessity to glorious gain.' Yet that is not the whole of our duty. For, secondly, as well as apprehending the wisdom of the body we must have what the ancients called 'the understanding of the heart.' Do not forget that the years 1847 and 1848 fall within this same far-reaching decennium of which we have been thinking. Those years marked the commencement of the organisation of preventive medicine by the State in the interest of national health (Towns Improvement Act, 1847, Public Health Act, 1848), and into which organisation have been brought the medical practitioner and the medical officer of health. We are all familiar with the grand procession of events that has not only changed the face of England but also incidentally the whole future outlook and service of English medicine.

"Lastly, all this vast development and the varied and far-reaching social issues which emerge from it must come within the consideration and foresight of those who would 'take occasion by the hand and make the bounds of freedom wider yet' in readjusting the course of medical study in an age of preventive medicine. For generations we have been brought up on an individualistic basis, concerned chiefly with the healing of the diseased body and ministering to the disordered mind, and 'so credulous of cure,' as Shakespeare said. But circumstances outside our control have been making a new kind of demand upon us, threefold in its application. We must become more *communal* in outlook; we must become more *preventive* in purpose and intention; and we must address ourselves to a *positive and constructive interpretation of health* and wholeness of body and mind."

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HUNTERS' IMPROVEMENT SOCIETY

At a recently-held Council meeting of the Hunters' Improvement Society it was decided to hold the Thoroughbred and Hunter Show at The Royal Agricultural Hall, London, on

March 17th, 18th and 19th, 1936, and the schedule of classes for the Hunter Section was drafted.

There will be separate classes for hunter fillies, colts and geldings foaled in 1933, 1934 and 1935, a four-year-old led class, four hunter riding classes and a class for ladies' hunters. Jumping classes were also included and a produce class for the three best animals by the same thoroughbred or registered hunter sire. In the latter class there will be a special prize of £25 to the stallion siring the first prize group, provided such winning stallion is one exhibited for a King's premium at the 1936 London Show. The total prize money will amount to £880 in 16 classes.

Vol. 14 of the Hunter Stud Book will be issued at the end of the year. Entries showed a slight drop—due, it was felt, to the withdrawal of the Light Horse Breeding Scheme two years ago, but nevertheless the satisfactory total of 958 (five stallions, 636 mares and 317 geldings) had been received.

It was reported that during the past country show season the Society had awarded 34 gold medals, 122 silver medals and £54 in produce premiums: a total of £230 as compared with £210 awarded last year.

It was decided to renew the offer of medals and premiums at associated shows next year, and the Council fully approved of the classification for hunters to be offered at the Royal Show next year at Bristol. They hoped that all members would support these classes so that a much more representative entry of hunters might be seen in both the breeding and riding classes.

The Council were informed that the 68 stallions which had served half-bred mares during the year as premium stallions had served a total of 4,475 mares (an average of 65·81 per cent. per stallion); this comparing with 63 stallions serving 4,110 mares last year. The Secretary reported that despite five applications, all the mare owners had not yet intimated the results of the service of their mares by premium stallions last year. Up to date, however, 4,071 returns had been received of the 4,110 mares served, indicating that 2,114 foals had been produced. This compared with 1,685 foals out of 3,096 mares the previous year.

Twenty-six candidates were elected members of the Society, and the Rt. Hon. Lord Digby was nominated to represent the Society on the Council of the National Horse Association.

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VETERINARY INSTITUTIONS IN FINLAND

We have received a copy of a brochure with the above title, published (Helsinki, 1935), by the Veterinary Department of the Ministry of Agriculture of Finland, describing the organisation of veterinary science in Finland. Until 1903 veterinary science was controlled by the Government Medical Board, with the help of a veterinary surgeon as consultant, but in that year the veterinary surgeon was given a position on the Board. In 1927 a Veterinary Department of the Medical Board was created with a veterinary surgeon as head, and finally in 1930 the Veterinary Department was constituted part of the Ministry of Agriculture. It deals with all matters concerning the health of domestic animals, measures for combating and preventing disease, and inspection of food-stuffs of animal origin. A scheme for the establishment of an agricultural college in which veterinary science shall form a faculty is in process of elaboration, but at present Finnish veterinary surgeons have to obtain their qualification abroad, from Germany. The right to practise in Finland is limited to qualified veterinary surgeons, who have been duly authorised. There are at present 262 veterinary surgeons authorised to practise in that country. There is a Government Veterinary Laboratory at Helsingfors for the investigation of infectious diseases, the preparation of sera, etc., investigation of sterility, including a section for research.

The brochure also gives a summarised report of the present position of animal diseases in Finland.

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THE MODE OF ACTION OF DRUGS

Sir Walter Langdon Brown, Emeritus Professor of Physics in the University of Cambridge, addressing the medical students of Birmingham University on the subject of "Fear and Pain," at the opening of their winter session, had some informative things to say, by way of introduction, on the mode of action of drugs.

"It always strikes me as curious," observed Sir Walter, "that the most materialistic age of medicine—the end of the nineteenth century—was the most sceptical as to the effect of drugs. The discovery of hormones and vitamins did much to overcome this, for if the body was dependent on such chemical substances, it was reasonable to conclude that it would be influenced by other chemical agents. If the body can be affected by a fraction of a milligramme of a hormone or vitamin, it no longer seemed absurd to expect a dose of five grains of some drug to do so. But recent work has thrown an interesting new light on the mode of action of drugs which is germane to my thesis. We have long been familiar with the fact that a nervous stimulus can liberate a chemical substance from a gland; we now know, largely because of the work of Loewi and of Sir Henry Dale, that all nervous stimuli act by liberating a chemical substance, either acetylcholine or adrenaline, at their terminals. Moreover it has been shown that the substance, whatever it may be, on which those terminals act can be made either more receptive or non-receptive by drugs. It seems to me that the pharmacology of the future will have to interest itself more and more in the natural history of these receptive substances. All the time new facts are accumulating along these lines. Thus we know that thyroxin and adrenaline may be poured out in response to an emotional state, and Zondek maintains that barbiturates, for instance, may so alter the surface tension of a cell as to bar the way to the admission of thyroxin. Norman Myers has shown also that certain drugs can bar the way to the admission of bacterial toxins. Clearly a large field for research is opening out before our eyes."

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Communications from Professor G. F. Boddie (Edinburgh), Messrs. E. H. Curbishley (Alderley Edge), K. D. Downham (Newport, Salop) and H. M. Salusbury (Sheffield).

Reports of meetings of the Lincolnshire and District, and Southern Counties Divisions, N.V.M.A., from Major F. L. Gooch and Mr. J. B. White, respective Hon. Secretaries.